



# FLIGHT



First Aero Weekly in the World.

Founder and Editor: STANLEY SPOONER.

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport.

OFFICIAL ORGAN OF THE ROYAL AERO CLUB OF THE UNITED KINGDOM.

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**EDITORIAL COMMENT.****The  
Coming  
Aero Show.**

Although perhaps not so internationally representative as the Paris Aero Show, the exhibition which opens at Olympia on Monday is nevertheless one upon which we think the British industry can congratulate itself. There is much there that is eloquent of progress, both industrially and in design, though this must be qualified with something of regret that several of our most prominent constructors have seen fit, for reasons which are doubtless good, to abstain from exhibiting. In point of numbers of machines exhibited, the 1914 Show is slightly in advance of that of last year, which again is satisfactory.

In other columns of this issue of *FLIGHT* we touch upon the more technical aspects of the Show, and during and after the exhibition we shall, in accordance with our usual custom, deal exhaustively with the individual exhibits and the lessons they convey. Therefore, we shall for the purposes of this article confine ourselves to generalities. To begin with, it is a pleasing fact that the proportion of wholly British machines shown

is well in advance of a twelvemonth ago, even though, as we have pointed out, more than one leading constructor is not represented at all. Undoubtedly, the realisation that at last the Government is determined to make up for lost time in developing our system of defence has produced a healthy reaction on the home industry, and even though there is still to be said that the direct encouragement given by the authorities leaves something to be desired, things are much better than they were at this time last year, while, moreover, the outlook for the immediate future is far and away more hopeful.

To come now to a brief consideration of the lessons of the Show, so far as it is possible to gather them at this early stage of things. The first aspect which will strike the student of development is that the seaplane type of machine has made much progress during the year. That is as might have been anticipated, having regard to our defence requirements as an insular Power. It is pretty generally agreed that the bulk of our aircraft will be needed to co-operate with the fleet, and thus the true line of development lies through the seaplane rather than the aeroplane proper. Not that the latter must be neglected, because, apart from the need for such machines for use by the army in land operations, there will unquestionably in the future be a large demand for aeroplanes for sporting and what may be termed general transit purposes. We are quite aware that some of the prophets will have it that there is no future in flying as a commercial proposition—that the private individual will not take to it. We, however, take a far more sanguine view of things, and, although we are quite convinced of the correctness of the present tendency to develop the machine for manœuvring over the water, by no means must other types be let stand still. Another point in this connection is that the seaplane seems to tend more and more towards the "flying boat" type, and is becoming, in the words of one well-known constructor, "a boat that will fly, rather than an aeroplane that will float."

Constructionally, there is discernible the same tendency towards the use of steel upon which we commented at the time of the Paris Show. True, steel construction has not made the same progress here as it has in France, and in Germany even more, but it is undoubtedly coming fast.

When we come to the engine department, things are not quite as flattering to the British constructor. So far as our information goes at present there will at the most be three British engines which were unknown last year, and of these three one at least is entirely untried in the air. It may be that engine constructors are too busy in

preparing for the Military Trials to devote time and attention to engines for exhibition purposes just now, and we sincerely hope that herein lies the explanation of the apparent want of attention manifested in this direction. Of engines of foreign design, manufactured or intended to be manufactured in this country, there are several, but we must say that we should be better pleased if the Show demonstrated that more of the undoubted genius for design possessed by British engineers had been concentrated upon this department of flight engineering. On the whole, however, it is possibly as well not to seem hypercritical. We have not done badly during the year that has elapsed since the last Show, and the future holds out promise of our doing even far better.

So far as regards the question of public support of the Show, and therefore of its paying its way, we cannot speculate at the moment. As a matter of fact, we are hopeful that the increased interest in aviation taken by the man in the street will operate to bring the public to Olympia in numbers sufficient to ensure its financial success. The point, however, is doubtful in the light of past experience, so that all the more congratulation is due to the S.M.M.T. which has again come forward in a public spirited manner to take the risk. Also, the thanks of the industry are due to the Royal Aero Club, without whose interest and influence it is more than probable there would be no Show at all.

## The Need for Landing Places.

One of the most notable points in the notable speech of Mr. Winston Churchill, at the dinner of the Royal Aero Club last week, was the passage in which he referred to the need for more landing places for aircraft. If, he suggested, the public were coming to assist the movement, whether by way of subscription of money or otherwise, the most acceptable form of assistance would be in the provision of places where aviators could land in safety and with comparative comfort. This is one of the points upon which we have insisted ever since this journal was

in its infancy. We have always recognised that the first essential to the full development of aviation must be the provision of suitable places for landing and taking off—even as essential, if possible, as that the machine itself should be developed. In saying this we do not want to be misunderstood. What we have in mind is this: supposing that we were content to accept the machine of to-day as final in type and development, we can still go on flying as we do to-day, taking our short distance jumps from Hendon to Brooklands and back, with an occasional essay into a long distance cross-country flight with one of the more remote aerodromes as the objective. But supposing the country to be sown with landing places at, say, twenty miles' intervals, along what must eventually be the main aerial routes, is it not conceivable that aviation, even with the aid of the present-day machine, would develop enormously? Undoubtedly we should see many more private individuals taking up flying as a sport.

On the other hand, is there any reason to think that even if the machine were developed to the point of perfection that the movement would progress in consonance unless we have provided in advance a sufficient number of landing places? The answer, we think, is most distinctly in the negative. Naturally, some progress would be made, if only because of the natural law that prevents stagnation—nothing stands still, for it either progresses or dies. But the progress made would be infinitesimal in relation to what it would if we had only begun at the right end and provided what we have described as the first essential to success. Efforts have been made in the past to bring home this elementary truth to those who are interested in aviation and its development, but in general those efforts were rather in advance of their time, with the result that we are comparatively little better off than we were three or four years ago. Something will have to be done, as Mr. Churchill insisted. How and by whom it is difficult to say at the moment, but we trust that the Royal Aero Club and others concerned in the movement will take to heart the First Lord's remarks on this most pressing subject.



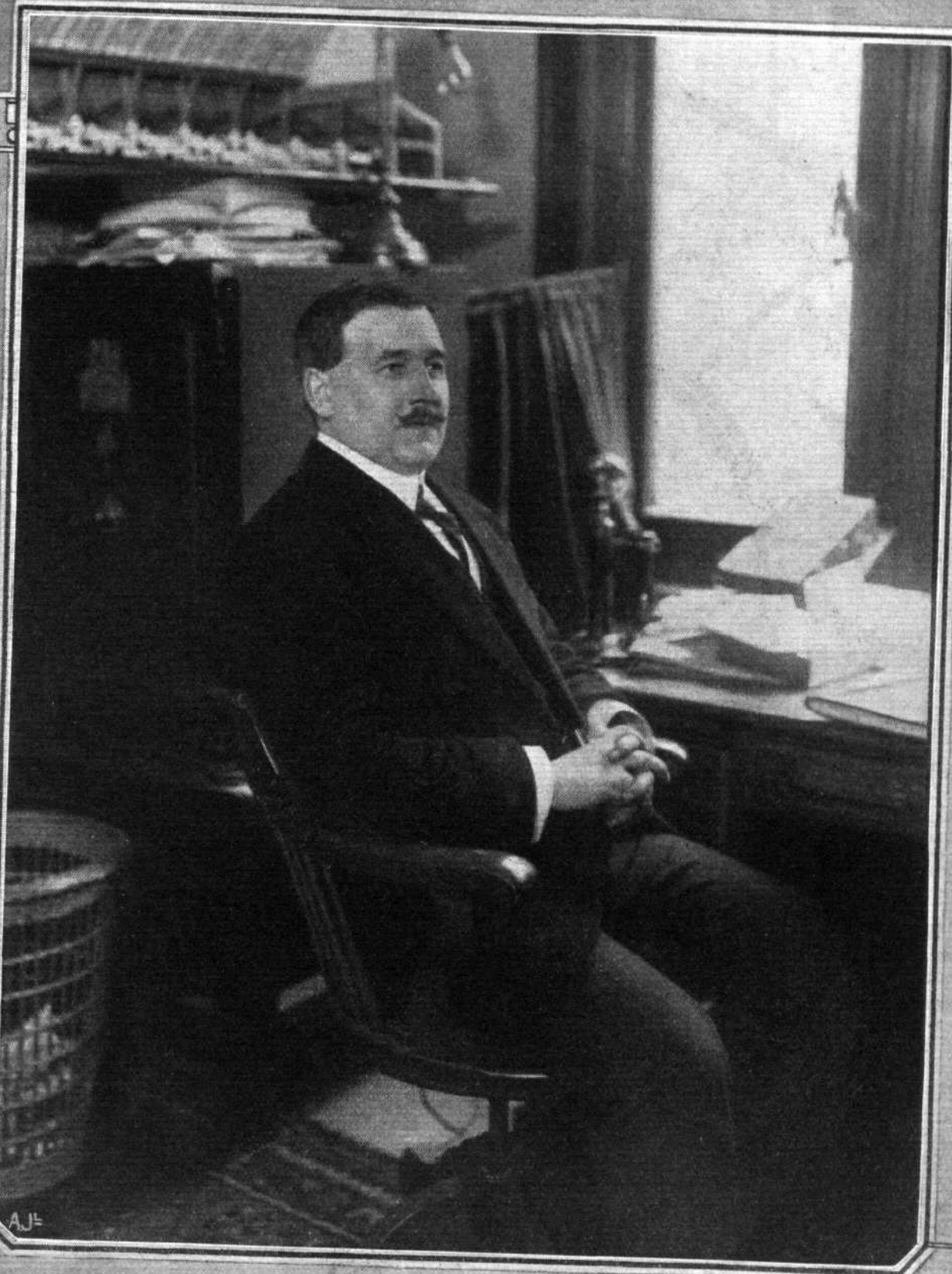
Igor Sikorsky and his fifteen passengers, whom he took up in his giant aeroplane, "Ilya Mourametz," on February 25th, at Korpusny aerodrome, St. Petersburg, rising to a height of 300 metres and remaining up for 18 mins. 10 secs., a world's record. In the background is seen the cabin portion of this great air 'bus.



MARCH 14, 1914.

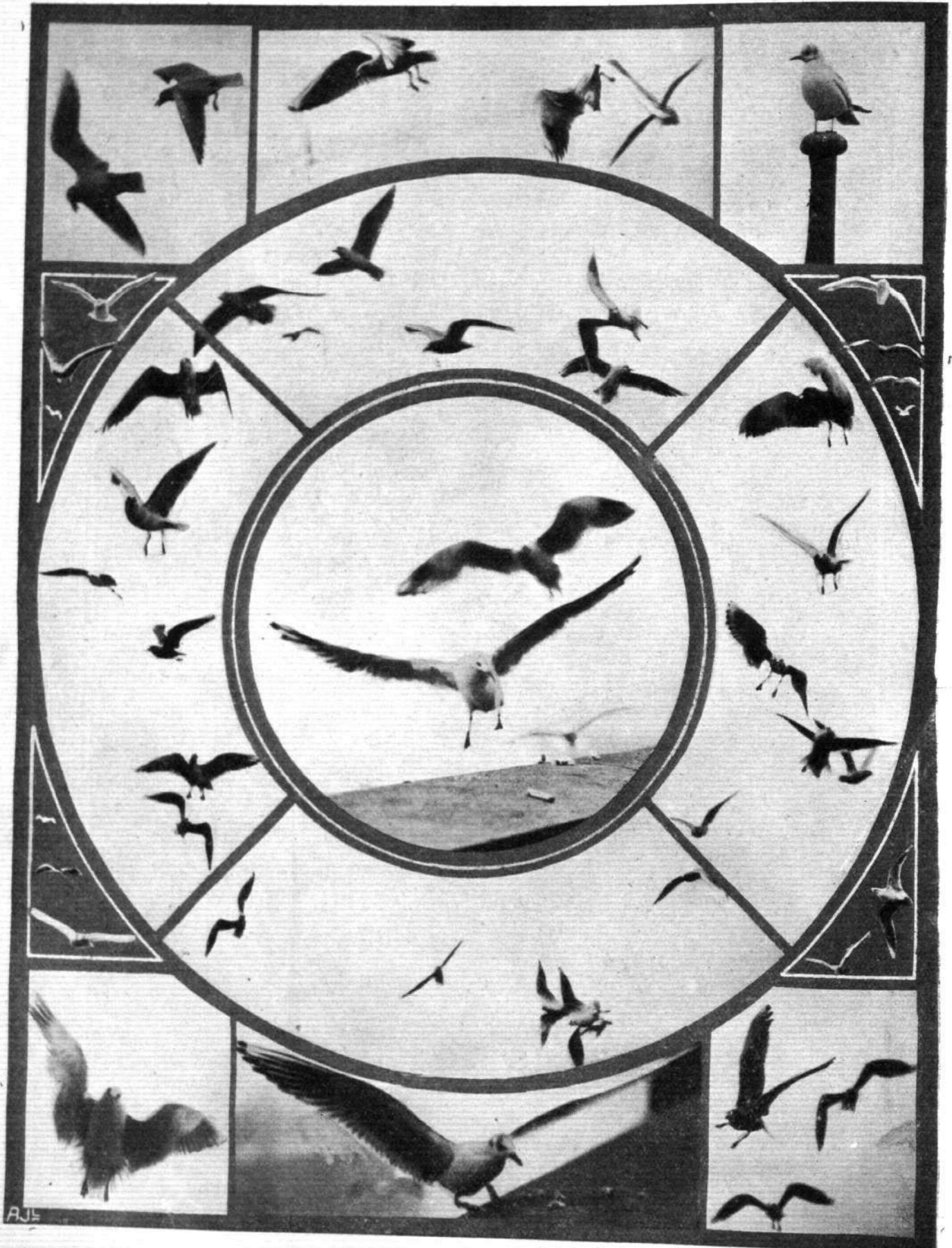
FLIGHT

# MEN OF MOMENT IN THE WORLD OF FLIGHT



OLYMPIA AERO SHOW.

MR. H. A. BLACKIE.



SOME REMARKABLE SNAPSHOTS OF LONDON GULLS.—Above are some snapshots of gulls, the study of which will well repay any trouble taken. Special attention is called to the one doing a steep bank, owing to the position of its feet. Although for pictorial effect the pictures have been cut into various shapes, all pictures are mounted dead square and upright as taken, so that the birds are shown in the exact positions they assumed in the air.

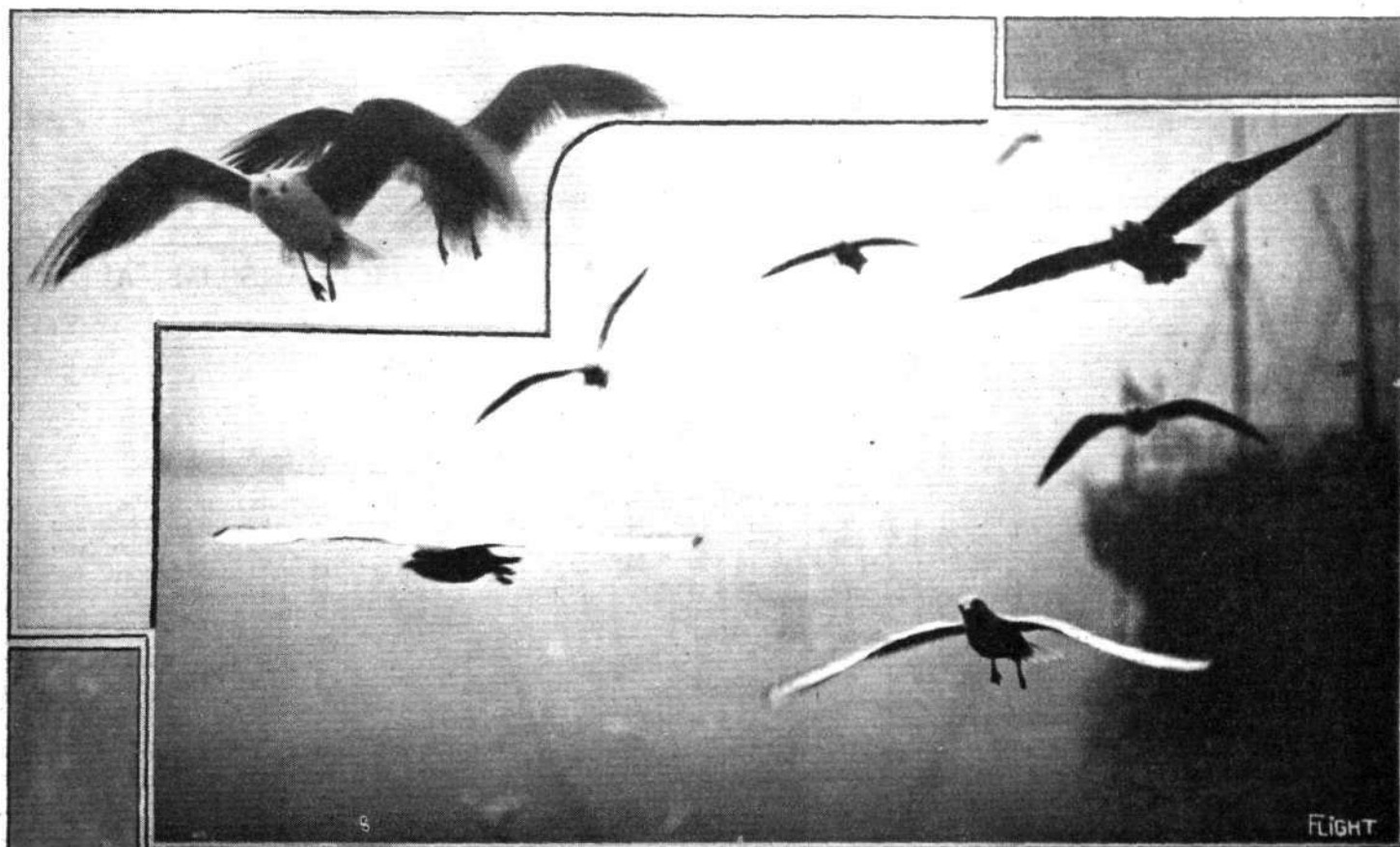
Flight " Copyright.



## THE LONDON GULLS.

FOR some time now the gulls have been very much in evidence by the bridge in St. James's Park and by the Embankment between Westminster and Blackfriars bridges, and those interested in flying might do worse than spend an hour feeding them and watching their evolutions in the air. The trouble is they move so quickly, that it is very difficult to follow their evolutions with the eye. The pictures published in this number of FLIGHT will give some idea of the peculiar positions they sometimes get into, and also show the queer attitudes in which they

blinker. It is perfectly certain also, although our photographer was not lucky enough to get a picture of it, that they can and do for a short period fly upside-down. If two gulls fly at a piece of food from opposite directions so that a head-on collision would appear to be unavoidable, and one gets the morsel just too quickly for the other, the second one, to avoid a collision, will suddenly turn upwards and over on its back, so reversing its line of flight, but almost instantly it comes over sideways by a kind of warping of the wings, very



"Flight" Copyright.

**SOME MORE LONDON GULLS.**—The gull gliding with outstretched wings is worthy of particular attention owing to the downturned entering edge and the dihedral angle at the root of the wings, merging into a negative angle at the tips. This is described in full elsewhere. The two gulls in the top left-hand corner are in flapping flight.

place their wings and body, in order to recover normal flight.

One point that up to now has led to much discussion is proved by one of the pictures; that is as to whether they use their feet to help to balance themselves. It will be clearly seen that one gull is putting its feet well over on a bank, to shift the position of the centre of gravity. The strange part seems to be that, when on a steep bank, they do not apparently spread out the bottom wing in order to derive support, but more generally fold it down at the tip—just the reverse to what it might be thought would be best in an aeroplane—unless it is that they use the extreme tip as a curtain or

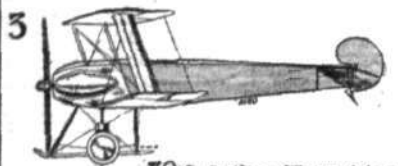
much after the way Hamel does his turnover. One particularly interesting photograph is that of the gull in the smaller picture gliding with outstretched wings. We do not remember ever seeing a picture of a gliding gull with the wings quite outstretched before. It will be noticed that there is a distinct dihedral from the root to about one third the span of the wing, after which there is a negative dihedral to the tips; also the entering edge is turned down. This bird was coming along at a fairly slow speed, and was individually noted. It did not move its wings at all, but kept the same altitude for quite a considerable distance. The two gulls in the upper left corner picture were in flapping flight.

## The Slack Fund.

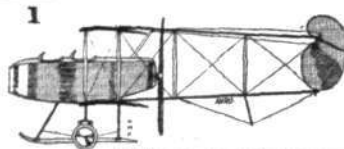
THE following is a further list of subscriptions received to date in connection with the above fund:—G. Albert, £2 2s.; W. Moorehouse, £1 1s.; J. Snell, 10s. 6d.; R. S. Poultney, F. J. Hodyson, H. A. Seal, Frank Owen, S. Simms, J. H. Thompson, J. J. Johnson, F. H. Milns, R. E. Whitfield, L. Midwood, Chas. M. Dawson, F. Swalz, F. Gill, R. M. Alpini, B. Garter Read,

2s. 6d. each; E. Corke, T. A. Bromley, Edgar Mennell, 2s. each; J. Whitfield, H. Dawson, H. Gledhill, G. Hydes, A. Althorp, B. P. Edwards, S. Radcliffe, F. Marshall, A. Huby, A. Benson, J. E. Kushaw, S. Savory, Gerald Simms, E. Payne, S. Dawson, Edwin C. Bolt, F. Townsend, H. J. Gaze, W. P. Bangs, W. H. Collins, F. H. Brough, Geo. Dixon, F. W. Butler, 1s. each; W. H. Snow, A. Guckroyd, 6d. each.

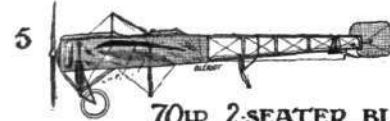
# THE OLYMPIA AERO



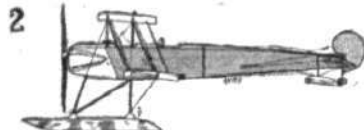
80HP AVRO TRACTOR



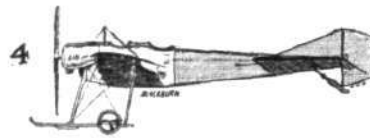
80HP MILITARY AVRO



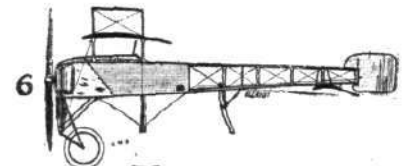
70HP 2-SEATER BLERIOT



80HP AVRO SEAPLANE



80HP BLACKBURN MONOPLANE



80HP SINGLE-SEATER BLERIOT

## TABULATED PARTICULARS OF ALL THE

No.	Machine.	Country of Origin.	Type of Machine.	No. of Seats.	Speed.		Dimensions.				Areas.					Weight.		
					Maximum.	Minimum.	Span.		Chord.	Gap.	Main Planes		Elevator.	Fixed Tail.	Rudder.	Empty.	Useful Load.	Total.
							Upper Plane.	Lower Plane.			Upper.	Lower.						
1	Avro ...	G.B.	Bi.	2	65	35	44	44	5'5	6	242	226	26	32	13	1000	800	1800
2	" ...	"	T.Se.	2	83	30	36	36	4'75	5'5	172	158	21	26	9	950	650	1600
3	" ...	"	T.Bi.	1	95-100	35-40	26	26	4'75	5'5	123	112	13	17	8	675	490	1165
4	Blackburn ...	"	Mono.	2	70	40	38	—	7'0	—	252	—	19	30	9'5	900	600	1500
5	Blériot ...	Fr.	"	2	72	—	34'2	—	—	—	248	—	—	—	—	770	618	1388
6	" ...	"	"	1	—	—	29'3	—	—	—	194	—	—	—	—	618	309	927
7	" ...	"	Se.	2	68	—	26'3	—	—	—	260	—	—	37'7	—	1120	550	1670
8	" ...	"	Mono.	2	75	—	33'1	—	—	—	205	—	—	—	—	770	606	1376
9	Bristol ...	G.B.	T.Bi.	2	62	33'5	37'7	37'7	6'06	5'9	215	205	14	15	8'6	970	695	1665
10	" ...	"	"	1	95	47	22	22	4'26	4'26	161'5	—	—	—	—	617	340	957
11	Clement ...	Fr.	Mono.	1	77'5	—	33'4	—	6'5	—	193	—	10'5	—	4'5	826	386	1212
12	Farman, H. ...	G.B.	Se.	2	59	—	51	31'2	6'2	4'9	310	160	22	40	15	—	660	—
13	Farman, M. ...	"	Bi.	2	—	—	50'8	32'8	—	—	560	—	21'5	43	—	1320	660	1980
14	Grahame-White ...	"	Bi.	2	80	42	37	35	5	6	183	175	23	26'2	15	1000	550	1550
15	" ...	"	"	5	51	30	62'5	43'6	7'17	6'5	539	310	38	138	11	2000	1100	3100
16	Hamble River ...	"	Se.	2	65	32	60	53	6	6	360	318	33	39	32	1300	1250	2550
17	Morane ...	Fr.	Mono.	2	70	50	37'5	—	5'6	—	200	—	16'1	—	8	870	617	1887
18	Nieuport ...	"	"	1	84	—	29	—	6	—	155'5	—	11	17	5'5	595	352	947
19	" ...	"	Se.	2	65	—	39	—	8	—	255	—	10'5	32'5	7	991	616	1607
20	Pem. Billing ...	G.B.	F.B.	1	50	—	28	28	5'625	5'25	153	140	20	31	12	750	220	970
21	Perry Beadle ...	"	"	2	64	—	35	23	6(4)	6'5	200	85	6	25	11	950	—	—
22	Sopwith ...	"	"	2	70	40	54	44'5	6'75	—	600	—	30	40	10	2200	1000	3200
23	Vickers ...	"	Bi.	2	70	40	38	38	—	—	400	—	30	35	13	850	850	1700
24	" ...	"	T.Bi.	2	100	45	25	25	—	—	270	—	14	25	6	600	600	1200
25	Samuel White ...	"	Se.	2	72	35	63	59	6'5	5'6	735	—	30	36	12	2600	900	3500

F. = France G.B. = Great Britain.

Bi. = Biplane. F.B. = Flying Boat.

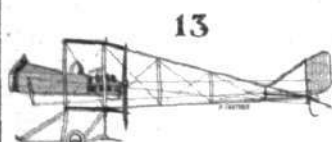
Materials: A. = Ash. C. = Cedar. H. = Hickory. M. = Mahogany. Sp. = Spruce. St. = Steel. W. = Wood.

Mono. = Monoplane.

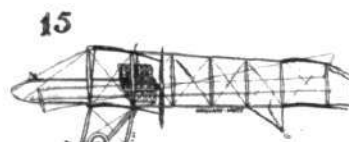
Se. = Seaplane.

T. = Tractor.

Materials: A. = Ash. C. = Cedar. H. = Hickory. M. = Mahogany. Sp. = Spruce. St. = Steel. W. = Wood.



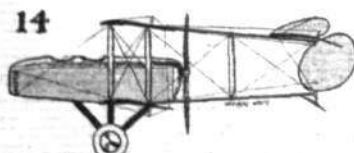
70HP M. FARMAN BIPLANE



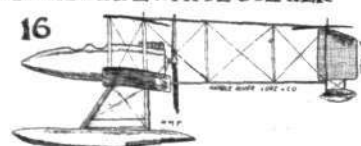
100HP GRAHAMEWHITE 5SEATER



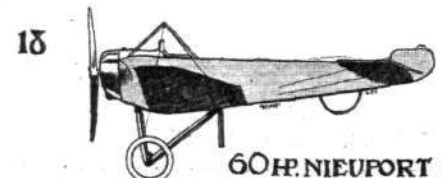
80HP MORANE PARASOL



100HP GRAHAME WHITE BI



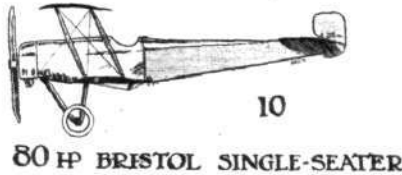
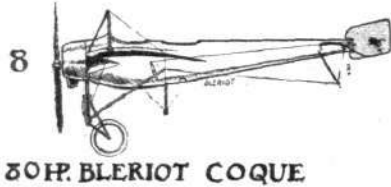
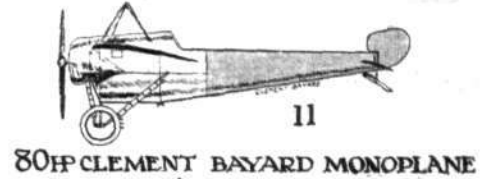
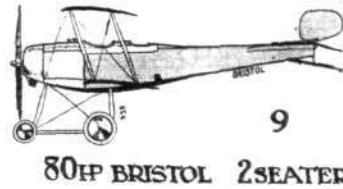
150HP HAMBLE RIVER BIPLANE



60HP NIEUPORT MONO



# SHOW AT A GLANCE



## AEROPLANES EXHIBITED AT OLYMPIA, 1914.

No.	Materials.			Type of Landing Gear.	Suspension.	No. of Wheels or Floats.	Controlling Planes.		Type of Fuselage.	Engine.			Propeller and Position.		
	Main Spars.	Fuselage.	Landing Gear.				Lateral.	Longitudinal.		h.p.	Maker.	No. of Cylinders.			Position.
1	Sp. and A.	A. and St.	St., A.	CS., W.	Rubber	2 W.	Ai.	RE.	Nacelle	80	Gnome	7	R.	Avro	R.
2	"	"	St.	F.	"	2 F.	"	"	Square	80	"	7	F.	"	F.
3	A.	"	"	CS., W.	"	2 W.	"	"	"	80	"	7	F.	"	F.
4	"	A. and Sp.	A.	W., S.	"	2 W.	Wa.	"	Triangular	80	"	7	F.	Blackburn	F.
5	"	"	St., A.	W.	Springs	2 W.	"	"	Square	70	"	7	F.	Integral	F.
6	"	"	"	"	"	2 W.	"	"	"	80	"	7	F.	"	F.
7	"	"	"	F.	"	2 F.	"	"	"	80	"	7	F.	"	F.
8	"	"	"	W.	"	2 W.	"	"	Coque	80	"	7	F.	Levasseur	F.
9	Sp.	"	A. and Sp.	S., W.	Rubber	4 W.	"	"	Streamline	80	"	7	F.	Bristol	F.
10	"	"	—	W.	"	2 W.	Ai.	"	Square	80	"	7	F.	Integral	F.
11	St.	St.	St.	"	"	2 W.	Wa.	"	Triangular	100	"	9	F.	"	F.
12	Sp.	A. and Sp.	"	F.	"	3 F.	Ai.	"	Nacelle	80	"	7	R.	"	R.
13	Sp.	Sp.	A. and St.	W., S.	"	4 W.	"	"	"	70	Renault	8	R.	"	R.
14	"	A., H. & Sp.	St.	W.	"	2 W.	"	"	"	100	Gnome†	9	R.*	" (4 bl.)	R.
15	A. and Sp.	A. and Sp.	A.	W., S.	"	4 W.	"	"	"	100	Green	6	R.	Lang	R.
16	Sp.	Sp. and C.	St.	FF.	Springs	4 F.	"	"	"	150	N.A.G. British	6	R.	Normale	R.
17	A.	A. and Sp.	"	W.	Rubber	2 W.	Wa.	"	Square	80	Gnome	7	F.	"	F.
18	St.	"	"	CS., W.	"	2 W.	"	"	"	60	Le Rhône	7	F.	Régy	F.
19	W.	"	—	CS., W.	Spring	3 F.	"	"	"	100	Gnome§	9	F.	Integral	F.
20	Sp.	Sp.	—	—	—	—	Ai.	"	Boat	50	"	7	F.	P. B. (3 bl.)	F.
21	"	M.	—	—	—	—	"	"	"	60	E.N.V.	8	F.	Integral	F.
22	"	"	—	—	—	—	"	"	"	200	Canton-Unné	14	R.	"	R.
23	St.	St.	St.	W., S.	Rubber	2 W.	"	"	Rect.	100	Gnome	9	R.	Vickers-	R.
24	W.	W.	Sp.	W.	"	2 W.	"	"	Coque	100	"	9	F.	Levasseur	F.
25	Sp.	Sp.	Sp.	F.	—	2 F.	"	"	Nacelle	200	Canton-Unné	14	R.	White	R.†

CS. = Centre Skid. F. = Floats. S. = Skid. W. = Wheels.

Ai. = Ailerons. R.E. = Rear Elevator.

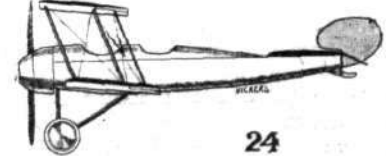
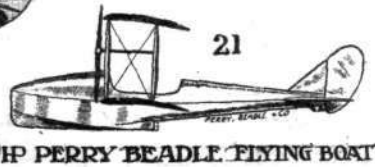
§ Standard—80 h.p. Le Rhône.

\* Chain drive.

F. = Front. R. = Rear.

† Double camber.

‡ Monosoupape.





# WHAT THERE WILL BE TO SEE AT &

## INTRODUCTION.

As in the four previous exhibitions which have preceded the one which opens at Olympia on Monday next, the keynote, at any rate as far as that section of it which is devoted to aviation is concerned, will be progress. Not only has each successive aero show witnessed to the development of the aeroplane and engine, but also to the growth of the industry, and this will be equally true of the exhibition which is just about to open its doors. It will be specially gratifying to the patriotic visitor to notice that the proportion of British-built machines is steadily increasing, so that at the present show out of the total of twenty-five machines on view, seventeen of them have been built in this country, while he will also learn that a goodly proportion of those which are now of foreign origin will shortly be produced over here. With regard to the design of the flying machines there will be a greater proportion of the waterplane or seaplane type than was the case last year, and, as is pointed out in a leader this week, this is only as it should be, remembering the insular position of the country. The importance of the aeroplane from the defence point of view is also reflected by the number of the machines which have been specially designed with the object of carrying armament or for special use on reconnaissance work. It is to be regretted that the Government has not seen fit to follow the precedent set last year and contribute an official exhibit, while those whose interest in aeronautical matters is not confined to the heavier-than-air type of machine, may also miss the airship which has usually dominated the centre of Olympia on previous occasions.

As important, if not more important, as the aeroplanes themselves, will be that section of the show devoted to engines for aerial work. Here will be noticed very much the same tendencies as in the case of the aeroplanes, *i.e.*, the gradual extension of the British industry, either by old-established firms turning their attention to the re-

quirements of the aviator, or by the building of successful foreign motors in British workshops. There is, too, as can be seen from our table, a healthy variety about the design of the engines shown, although, judging by the majority, the tendency is to get back to the vertical arrangement of the cylinders, which has been found so successful in motor car practice. It is noticeable, also, that practically all the engines are of greater power than has been the average at previous shows.

Apart from the actual flying machines on view, there will, however, be plenty to interest the visitor. Especially in view of the great attention which is now being given to waterplanes, the exhibits of motor boats, and hydroplanes will enable the various forms of craft suitable for travelling along the surface of the water, to be compared.

Another important section of the exhibition, and one which seldom fails to afford a great deal of interest to the general non-technical visitor, is that devoted to the models. It is good to notice with what seriousness some of the Model Clubs deal with this matter, and the excellent *esprit de corps* which prevails among aero-modellists. Lastly, reference might be made to the lectures organised by the Aeronautical Society. The fact is often overlooked that a great deal of educational work still remains to be done among all classes of people who are profoundly ignorant of the most elementary knowledge of the fundamentals of the science; consequently, altogether erroneous ideas are spread abroad that some effort of this character should do much to prevent. We are now at a stage of aeronautical progress when marvellous developments may occur in aerial transit at a no distant time, and the possibility that aircraft will be used for regular service in commercial work when time is an important factor, induces us to lend our full support to a scheme that will assist in removing that prejudice and apprehension that, happily, is now fast disappearing from the minds of the people of this country.

## THE EXHIBITS. [The figures in brackets are the stand numbers.]

### The Royal Aero Club of the United Kingdom. (93-95.)

ON this stand the models entered for the competition organised by the Kite and Model Aeroplane Association under the patronage of the Royal Aero Club will be exhibited, in connection with which the latter body are offering prizes amounting to £50. Visitors to Olympia should not fail to inspect this collection, which will, probably, be far in advance of anything shown previously of a similar character, either in this or in any other country, both as regards the number of exhibits entered as well as the technique and skill displayed in their construction.

### The Aeronautical Society of Great Britain. (20.)

WILL have an office for the supply of their publications, which include: the quarterly Journal of the Society, the *Aeronautical Classics*, the *First Report of the Bird Construction Committee*, the *Annual Reports from 1866-93*, and a history of the Society. The original press-cutting album of the Society, as well as photographs and other records of note, will be exhibited.

A series of lectures entitled "How it Works" has been arranged to follow the cinematograph entertainment organised by the S.M.M.T., and will be given each evening from 7.30 to 8.0, excepting on Wednesday, when the lecture will be held in the afternoon at 3.30. The subject of the first lecture, which will be delivered by Mr. Mervyn O'Gorman, is "How an Aeroplane is Built," and the chair will be taken by the Marquess of Tullibardine. The complete series is as follows:—

March 16th.—"How an Aeroplane is Built"—Mr. Mervyn O'Gorman.

March 17th.—"How an Aeroplane Lifts"—Mr. Bertram Cooper.

March 18th (at 3.30 p.m.).—"How an Aero-Engine Works"—Mr. A. Graham Clark.

March 19th.—"How an Aeroplane is Steered and Controlled"—Mr. Bertram Cooper.

March 20th.—"How an Aeroplane Upsets"—Mr. Leonard Baird.

March 21st.—"How Aircraft are Used in War"—Col. Sykes.

March 23rd.—"How an Aeroplane is Propelled"—Mr. Francis H. Bramwell.

March 24th.—"How an Airship Works"—Capt. C. M. Waterlow.

March 25th.—"How a Waterplane Works"—Mr. C. Holt Thomas.

### Avro (A. V. Roe and Co.). (64.)

THIS well-known firm will exhibit three machines, all of which are fitted with 80 h.p. Gnome engines—a tractor hydro-aeroplane, a fighting biplane, and a scout tractor. The first mentioned has already proved its value as a fast machine with a wide speed range and excellent climbing capabilities, and is so familiar to our readers as a land machine, a description of which appeared in FLIGHT for December 6th last, that it is unnecessary to discuss it further here. It was upon a machine of this type that Raynham established a British height record during last month. The aeroplane shown will,

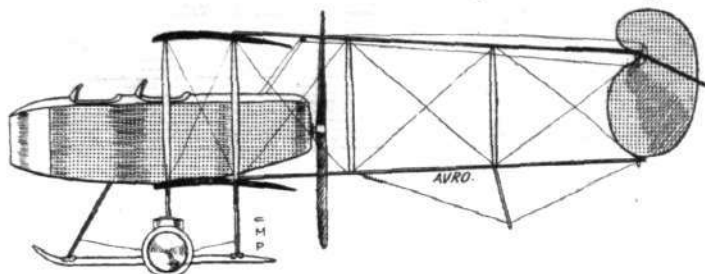


# OLYMPIA



however, be provided with floats, for sea service, and various minor improvements have been recently incorporated in the design, notably in regard to the springing of the undercarriage and the floats, so that it will be worthy of close inspection.

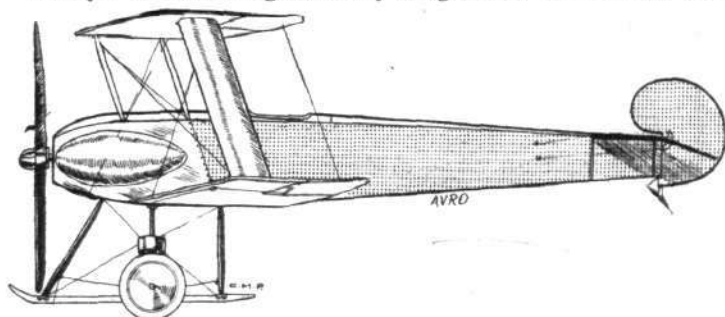
The fighting biplane is a land machine of the "pusher" type, and has been recently introduced. The observer, or gunner, is seated well in front of the machine so as to give a wide range of



The 80 h.p. Avro biplane.

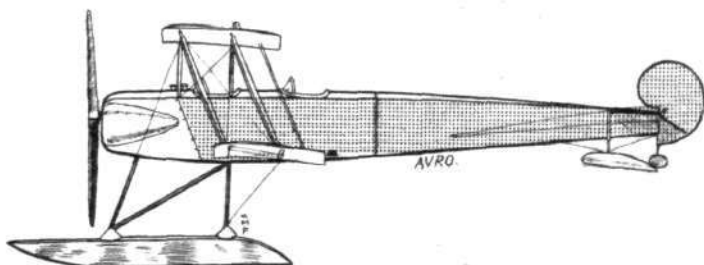
vision for observation purposes, while sufficient fuel may be carried to last for 4½ hours' continuous flight. The engine is encased in a streamline casing, as is also that on the former machine, and is supported in bearings fore and aft so as to obtain greater rigidity and avoid the use of an overhung engine.

The "tabloid" single-seater scout, the latest production of Messrs. Roe, embodies several novel features, and is an excellent example of modern high-efficiency design, as is evident from the



The 80 h.p. Avro tractor biplane.

remarkably wide speed variation which is claimed for it. The wings are set back at the tips, so as to enhance the stability of the machine, while the unique system of bracing employed enables a number of wires (which are anchored in such a manner that no matter how the centre of pressure upon the wings may move, the loads are taken by both spars) to be dispensed with, thereby reducing the head resistance to some extent. This machine is fitted with air



The 80 h.p. Avro seaplane.

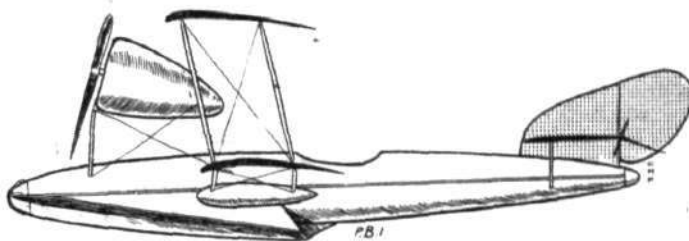
brakes, and, it is stated, may be dismantled and re-erected in a few minutes. The landing chassis is similar in construction to that on the 80 h.p. tractor land machine. The engine is an 80 h.p. "monosoupape" Gnome.

Each of the above machines will be fitted with the Avro safety belt, concerning which there is ample evidence of the fact that it has been designed by a practical man. Its notable features are, that

the aviator gets into and out of the belt by means of the quick-release devices, which are in duplicate—one on each side—thereby ensuring that it is in working order, and the ample depth of the front section of the belt, which precludes any possibility of internal injury resulting should the pilot be suddenly thrown forward.

## Pemberton Billing. (49.)

AMONGST the new comers at the Show one of the most interesting will be the flying boat exhibited by Mr. Pemberton Billing. The "Supermarine," as Mr. Billing calls his flying boat, represents radical changes from usual practice in flying boat construction and design. The boat itself, as will be seen from accompanying sketch, is cigar shaped, thus providing a perfect streamline. The construction of the boat is unusual and will be fully described later. The Supermarine is of the tractor type, and it will be seen that the position and attitude of the engine and propeller is highly original



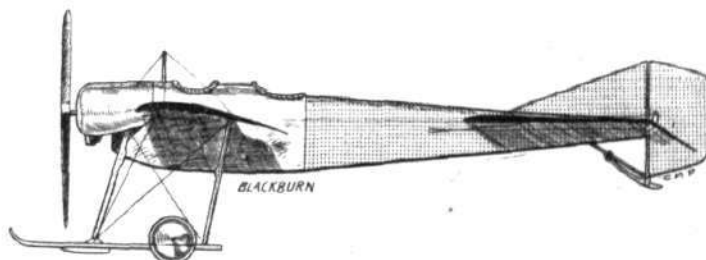
The 50 h.p. Supermarine (Pemberton Billing).

inasmuch as they are mounted above the boat and in front of the main planes. It will be interesting to see how this arrangement will work in practice, the theory, of course, being that setting the propeller-shaft at an angle to the boat will facilitate getting off the water.

In addition to the complete machine there will be exhibited on this stand a model of the next Supermarine to be built, which is to be known as the P.B. 2, whilst the present machine is called the P.B. 1. A three-bladed propeller of special construction, and a supermeter for determining the height above the ground or the sea, and described elsewhere in this issue, will complete the exhibit on this stand.

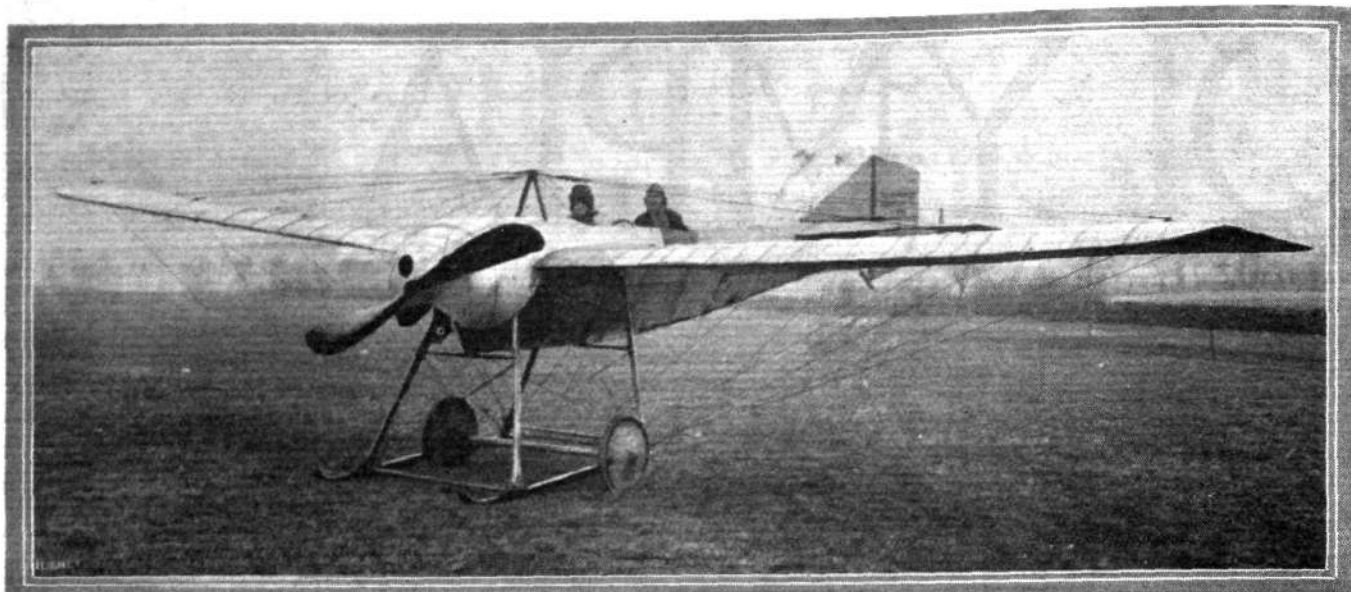
## Blackburn (Blackburn Aeroplane Co.). (63.)

THE exhibit on this stand will consist of the 80 h.p. Gnome Blackburn monoplane, which has been specially built for high speed cross-country work. It will be of practically the same design of machine as was described in FLIGHT for December 27th last, when we noted that a similar machine had traversed a distance of 1,800 miles, and carried over 120 passengers during the preceding three months.



The 80 h.p. Blackburn monoplane.

Every endeavour has been made in the design of this machine to reduce head resistance to a minimum, and to give the greatest comfort and safety to the pilot and passenger. The front part of the fuselage is covered in with sheet aluminium, and the engine is encased for about five-eighths of its circumference in an aluminium cowl, which is continued to the rear so as to form a scuttle dash, so that the exhaust or oil from the engine is prevented from blowing back upon the pilot or passenger, who are well screened from the wind. It is stated that the factor of safety used in the design of cables is not less than ten.

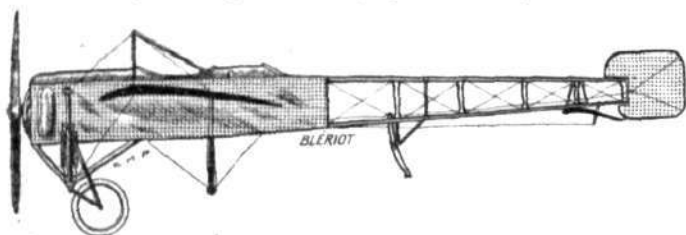


The 80 h.p. Blackburn monoplane which will be among the exhibits. A machine of similar design, piloted by Mr. Blackburn, won the Inter-County Air Race held at the latter end of last year in Yorkshire.

## Blériot (L. Blériot). (69.)

M. BLÉRIOT will have a most comprehensive exhibit, no less than four machines being shown, as well as sand yachts.

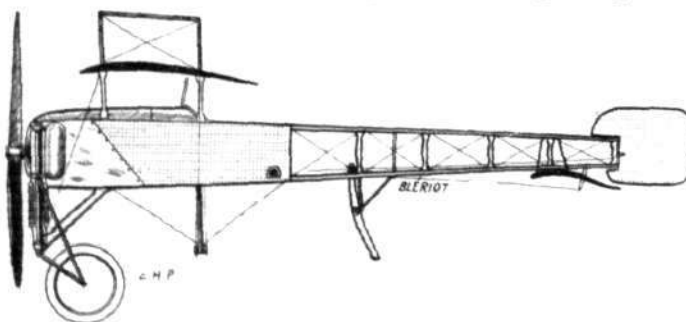
The first of these is the Blériot No. XI-2 tandem two-seater monoplane, on a similar machine to which the then world's distance record with a passenger of 815 miles in one day, and the world's height record of 16,326 ft. were established in 1913. The same type of machine was used by Vedrines in his flight from Nancy to Constantinople, and by Bider in flying over the Pyrenees and the



The 70 h.p. Blériot two-seater monoplane.

Alps. This machine, the essential features of which are already known to our readers, when ready for transport, occupies a width of 5 ft. 7 ins. only, and is 6 ft. 2 ins. high, while four mechanics can re-erect the wings ready for flight in half an hour.

The "Total Visibility" type of machine is somewhat similar in construction and arrangement to the well-known No. XI type, but the wings have been slightly raised so as to enable the pilot to make his observations underneath the wings. The advantage to be gained



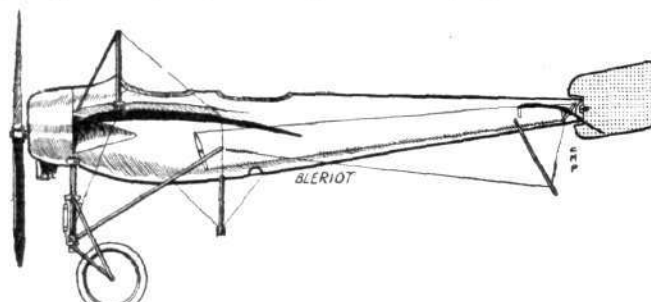
The new 80 h.p. Blériot single-seater.

from the adoption of this construction in a scouting aeroplane will be readily understood.

The third type of machine is similar in design to the No. XI-2 monoplane referred to above, the principal difference being in its adaptation for sea service by the substitution of floats for the ordinary wheels. The landing gear follows the usual Blériot practice, excepting that the struts are placed wider apart so as to

give greater stability to the machine on the water, and the floats are capable of articulating independently of one another, to allow of ample freedom of movement when landing or riding a rough sea.

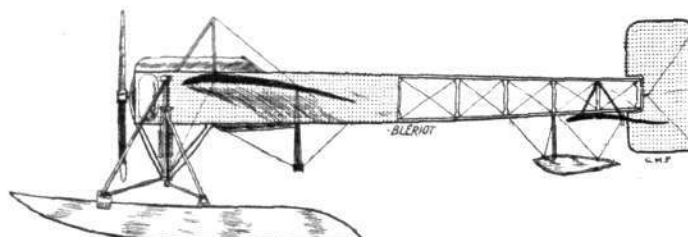
In the remaining machine, which made its appearance at the Paris Aero Show (See FLIGHT December 20th, 1913), is a "coque fuselage" monoplane, and is a speed machine, capable of travelling



The 80 h.p. Blériot cocque monoplane.

at 75 miles per hour and climbing at the rate of over 450 ft. per minute. It normally carries sufficient fuel to last for four hours, and is a two-seater, the observer being placed behind the pilot, and by lying down in the fuselage can observe the country over which the machine may be travelling, through an aperture in the bottom of the coque. A speaking tube, fitted with a microphone, is fitted to enable the passenger to communicate with the pilot.

The Blériot sand yachts will complete a very interesting exhibit.

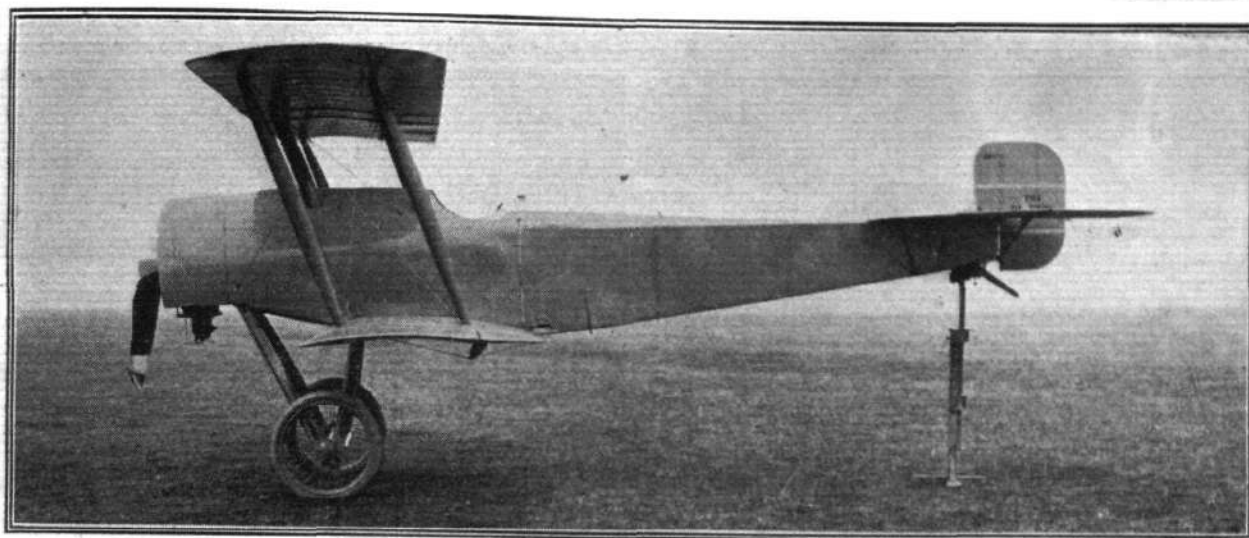


The 80 h.p. Blériot seaplane.

## Bristol (British and Colonial Aeroplane Co., Ltd.). (43.)

THIS firm of constructors, who were our sole representative at the recent Paris Aero Exhibition, are showing two machines, one of which is a two-seater with the seats arranged in tandem, and the other a single seater, as well as their travelling motor-repair workshop. Both machines exhibited are 80 h.p. Gnome-engined tractor biplanes, the engine on the two-seater being of the new Monosoupape type mounted upon supporting plates of pressed steel, and entirely enclosed in an aluminium shield that is continued forward





Side view of the new fast Bristol single-seater.

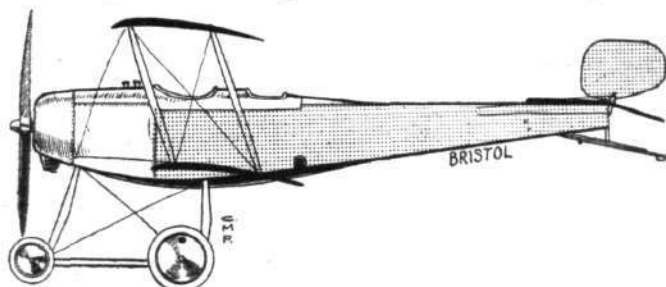
in advance of the propeller for which it forms the boss and with which it rotates.

Special attention has been given in the design of the wings, which, on the single-seater machine, are all fitted with double-acting ailerons. The empennage of this machine is non-lifting, and the frames for this as well as those for the elevator flaps and rudder are of steel tubing, the fabric covering being sewn on. On the two-seater the empennage is set at a negative angle and is used as a directive organ. The landing chassis of the latter is of the standard

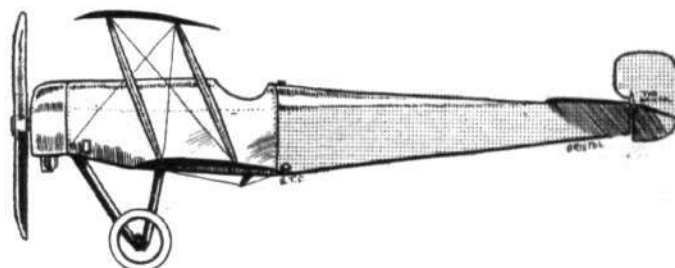
with suitably arranged switches for controlling the machine tools, which are driven by a separate electric motor. These machines include a lathe, band-saw, drilling machine, portable drill and a grinding machine, but a hand-operated shaping machine is also fitted. Increased floor space is obtained whilst the workshop is at rest, by dropping the two halves of each side door.

**Clement Bayard (Delacombe and Marechal). (67.)**

A 100 H.P. Gnome-engined Clement Bayard armoured steel scouting monoplane will be exhibited on this stand, similar to that



The 80 h.p. Bristol two-seater biplane.

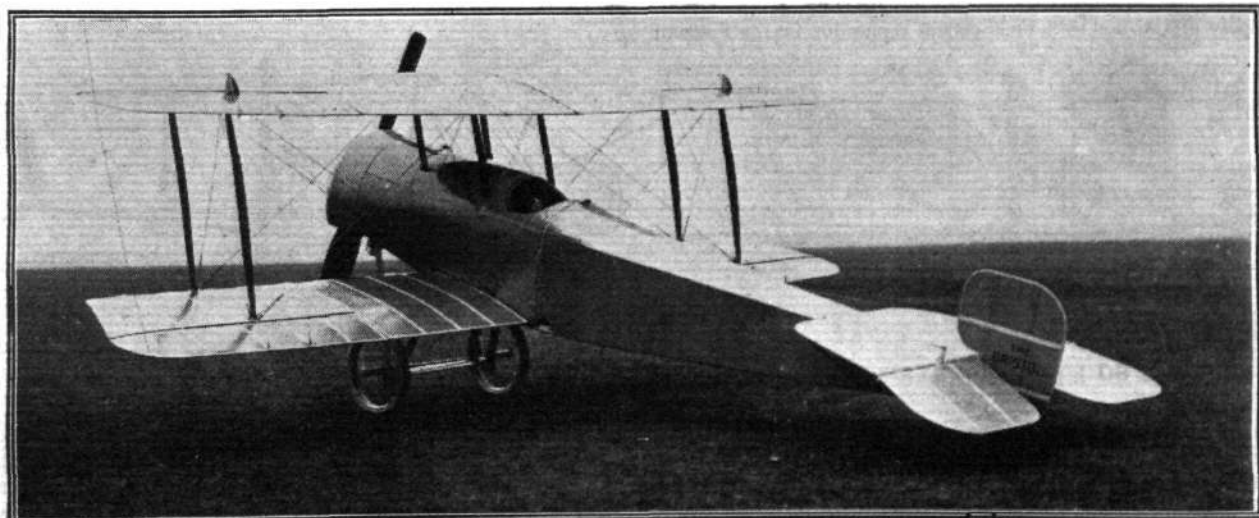


The small 80 h.p. Bristol single-seater.

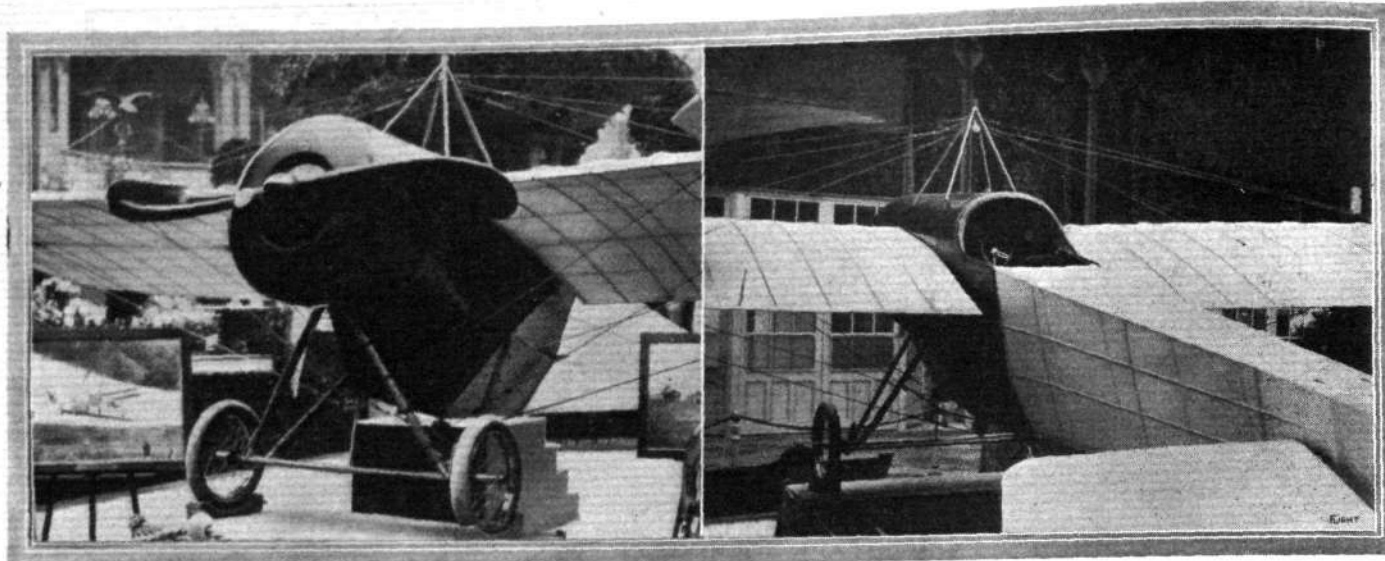
Bristol type, but the single-seater machine has a special two-wheeled undercarriage. Sufficient petrol may be carried to give a flight lasting for 3 hours in the case of the single-seater and 5 hours for the two-seater.

The travelling workshop is fully equipped with every means necessary for the purpose of executing repairs to an aeroplane, and has been kept to the smallest possible dimensions. Winding gear, for the purpose of enabling the vehicle to wind itself or haul a trailer, is provided, as well as a dynamo of 50 amperes capacity at 65 volts,

which was at the Paris Salon and described in our issue for December 27th last. The machine is a single-seater and a tractor, the fuselage being covered in on the underside from the engine, which is enclosed by a cowl, to the rear of the pilot, by a casing of nickel steel, for protection against rifle fire. Notwithstanding this, however, the machine is by no means as heavy as one would imagine, and it is possible that this is accounted for, in some measure, by the special system of bracing for the wings which is employed. As has been stated already, it may be said that an all-steel construction



Three-quarter rear view of the new Bristol single-seater.

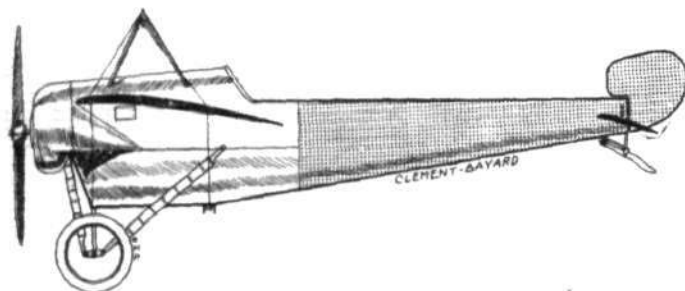


THE CLEMENT BAYARD MONOPLANE.—View of the chassis and front, and on the right a view from behind.

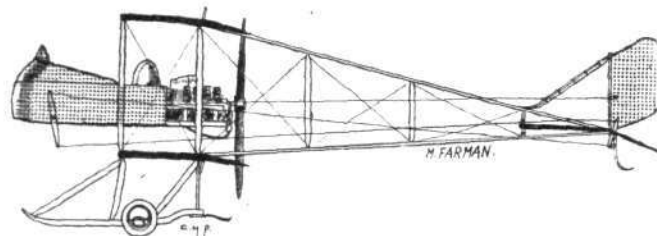
is employed, only the ribs for the supporting surfaces being made of wood. An uncovered wing will be on view at Olympia. The steel tubes for the landing chassis are of circular section, but, to reduce air resistance, they have been fitted with wooden streamlines.

In addition to the Clement dirigible engine, which is referred to elsewhere, the Avi-auto carburettor, for which special advantages

such as raising the nacelle, so that the line of thrust now passes approximately through the centre of the gap. The tail outrigger, which is now of a slightly different form, carries at its rear extremities a tail plane of the monoplane type, surmounted by two rudders. The arrangement of the pilot's and passenger's seats, as well as of the tanks, will be found to be different from that of the usual M. Farman, whilst a close inspection of the whole machine will reveal numerous ingenious details of construction, which will be dealt with in a later detailed description.



The 80 h.p. Clement Bayard monoplane.



The 70 h.p. new M. Farman biplane.

are claimed, the Aerophote camera, specially designed for aerial work, the La Las Aeroplane telephone, and various forms of the C.A.D. Remote Control apparatus will be exhibited on this stand.

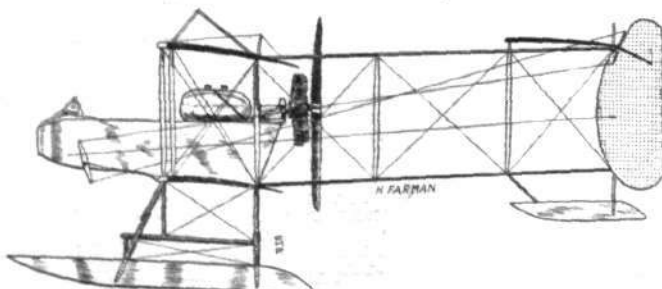
**Farman (The Aircraft Manufacturing Co., Ltd.) (41.)**

Will show two machines of exceptional interest, inasmuch as neither of them have previously been shown in public in this country. One of these machines will be a H. Farman hydro., mainly interesting on account of the ingenious way in which the floats are sprung in order to minimise shock on alighting. In its general arrangement this machine will be similar to its predecessors which have already established such an excellent reputation for the Farman

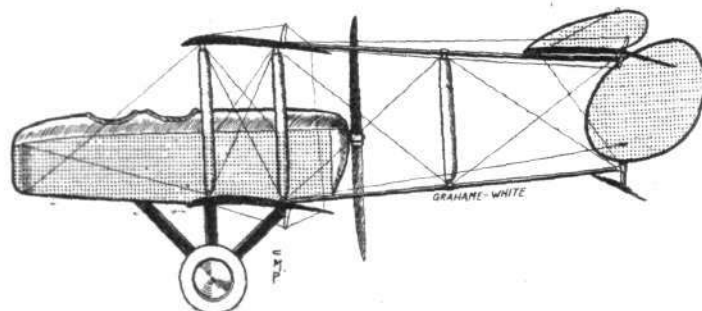
Two complete nacelles, one H. Farman and one M. Farman, will complete this exhibit.

**Grahame-White (Grahame-White Aviation Co.) (40.)**

ON the stand of the Grahame-White Aviation Co., Ltd., will be shown two biplanes, one of which is already known to our readers through descriptions in the columns of FLIGHT, i.e., the five-seater biplane which established a record by carrying ten passengers at Hendon. This machine will be all-British, as it will be fitted with a 100 h.p. Green engine. The other biplane will be



The 80 h.p. H. Farman seaplane.



The new 100 h.p. Grahame-White biplane.

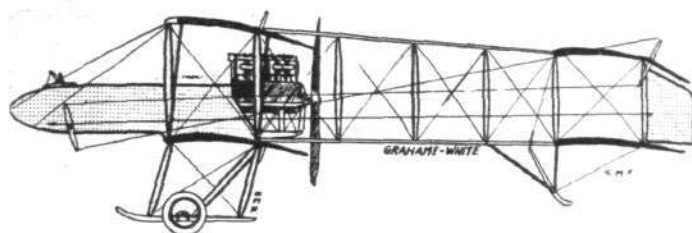
firm in this country and abroad, but several detail innovations will be found to have been incorporated in its construction.

The second machine shown on this stand will be a M. Farman biplane of the new type without a front elevator. Several alterations from previous types of this well-known make have been effected. Most noticeable of these is, of course, the disappearance of the front elevator, which has been followed by other changes,

of the pusher type fitted with one of the new Gnome 100 h.p. *monosoupape* engines. Several highly interesting constructional details have been incorporated in this machine, whilst the general arrangement is such as to make it specially suitable for military purposes. The machine, as shown, will be fitted with a land chassis, but a different form of chassis having floats instead of wheels can be easily and quickly fitted, thus turning the machine into a waterplane.



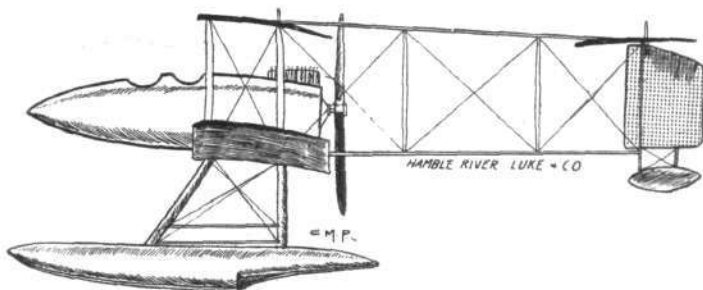
The seats are arranged in tandem, the pilot occupying the front seat, and arranged comfortably inside the very wide nacelle. The method of mounting the engine and propeller is very ingenious, as are also numerous other details, so that a visit to this stand should prove highly interesting and instructive.



The 100 h.p. five-seater Grahame-White biplane.

#### Hamble River (Hamble River, Luke and Co.). (68.)

ON the stand of the Hamble River, Luke and Co. will be shown a seaplane which, whilst following standard lines as regards its general arrangement, is interesting from the point of view of construction. The nacelle, as will be seen from the accompanying sketch, is of cigar shape, and carries at its rear end a 150 h.p. N.A.G. engine. The main floats, of which there are two, are of rather novel design, and incorporate in their construction several new and interesting features. For the design of this machine, we understand Mr. F. Murphy, formerly connected with the British

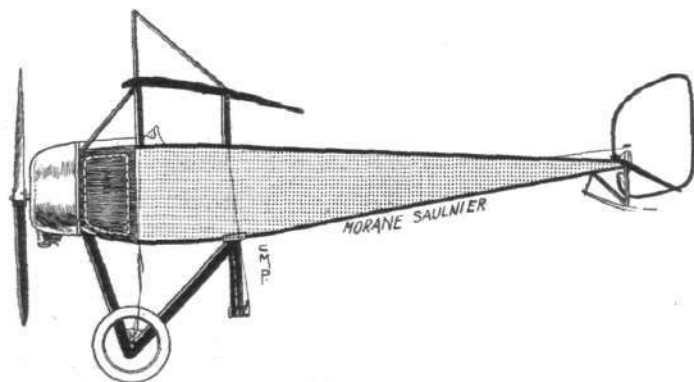


The 150 h.p. Hamble River seaplane.

and Colonial Aeroplane Co., is responsible, and, although this machine has not as yet been tried, there is little doubt but that it will give a good account of itself in the future, and thus become a valuable addition to the list of British seaplanes.

#### Morane-Saulnier (Grahame-White Aviation Co.). (40.)

OF the three machines shown on the stand of the Grahame-White Aviation Co., one will be a Morane-Saulnier monoplane of the "Parasol" type, similar to that which was exhibited at the last Paris Aero Show, when it was described in these columns. It will



The Morane-Saulnier Parasol.

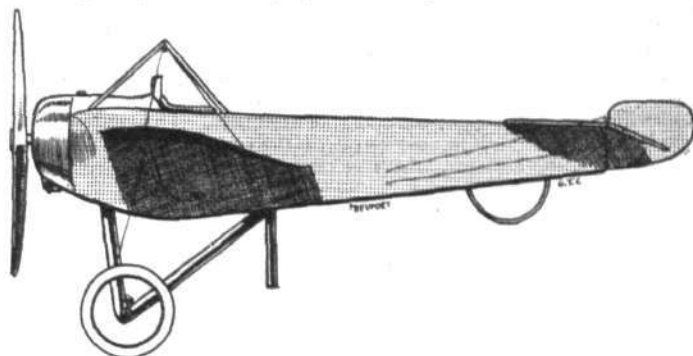
be the first public appearance of this Morane model in this country, and as it represents a radical departure from usual practice will be well worth a close inspection, especially in view of the excellent flights which have been accomplished on a similar machine in France.

#### Nieuport (England) Ltd. (65.)

ON this stand there will be two machines, one a single-seater monoplane and the other an 100 h.p. hydro-aeroplane, both of which are, of course, tractor machines. These machines will be similar in

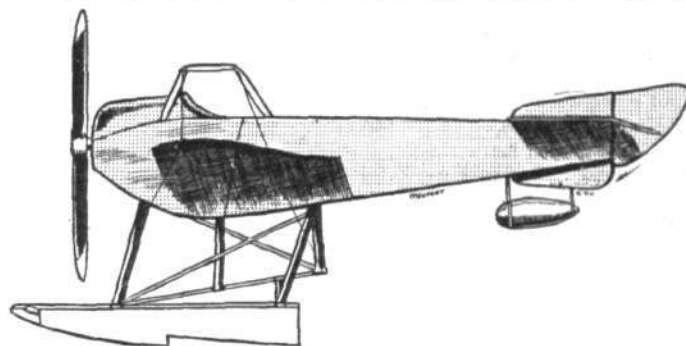
design to those exhibited at the Paris Aero Show in December last, and the hydro-aeroplane will, in general, follow the usual construction embodied in the Nieuport monoplanes, that have set up such excellent performances in the past, concerning which we would venture to mention the long-distance flight of Helen for the Michelin prize, and the height record established by Legagneux. But the single-seater machine will depart somewhat from Nieuport practice, principally, however, in regard to the landing chassis, and in the shape of the wing surfaces, to which, however, we referred in our report on the Paris Exhibition. The standard type of hydro-aeroplane is fitted with an 80 h.p. Le Rhone engine, and the prices at which the two machines are listed are £1,080 and £2,000 respectively.

The skimmer, which will complete the exhibit, is fitted with a 160 h.p. engine, and a propeller having a diameter of 3 metres,



The 60 h.p. Nieuport single-seater.

which are mounted on a tubular steel framing. The buoyancy apparatus is in three parts, formed by a central hull and two side floats—the angle of incidence of the steps on the latter being capable of variation by means of gearing. The side floats are more deeply immersed than is the hull, so that when a speed of about 32 miles per hour is attained, the central hull is lifted clear of the water, and, consequently, a great increase of speed is permitted, the angle of



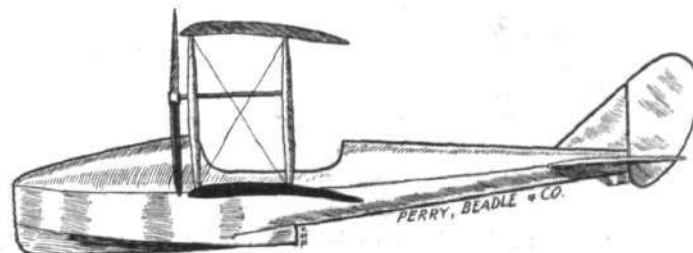
The 100 h.p. Nieuport seaplane.

incidence of the steps being made to correspond with the speed at which the craft is moving.

#### Perry Beadle (Perry, Beadle and Co.). (42.)

ANOTHER newcomer to the Show will be the flying boat exhibited by Messrs. Perry, Beadle and Co.

This machine differs materially both in design and construction from usual practice. From the accompanying sketch it will be seen that the lines of the boat itself are highly original. In front it is very deep and wide, and in this portion of it is housed the engine, a 60 h.p. E.N.V., which drives through chain-and-sprocket gearing the two propellers situated in front of the main planes.



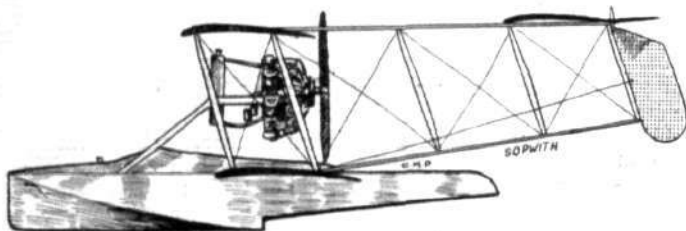
The 60 h.p. Perry Beadle and Co. flying boat.

The tail planes are fish-shaped and form a continuation of the boat itself, being of the same material, that is to say, two layers of mahogany. The most interesting point, however, is perhaps the position and construction of the lower main plane. This member is covered with mahogany similarly to the boat, instead of the usual fabric covering, and is partly submerged in the water when the machine is at rest.

## Sopwith Aviation Co., Ltd. (44.)

OWING to press of work, and, in consequence, their inability to complete the second machine in time for the Show, this firm will only have one machine at Olympia—a two-seater bat boat of the pusher type; a machine that somewhat resembles in appearance that built by Messrs. Sopwith for the Mortimer Singer Prize, but which is of more advanced design. We should have liked to have seen further examples of their workmanship and design, having in view their excellent record with both their land and sea machines, and we would especially recall the performance of the 100 h.p. Green-Sopwith hydro-aeroplane in the Circuit of Britain Race last August. But what they lack in quantity they have compensated for by quality, as the machine exhibited is one of the finest we have seen, and will be sure to attract considerable attention. The engine is a 200 h.p. 14-cyl. Salmson mounted upon the rear struts between the main planes, the radiator, which is of the honeycomb type, being placed on the front struts.

The whole machine will be of especially substantial construction, the boat being an extremely serviceable craft, and well provided with watertight compartments. The pilot and passenger sit side by side in a well in the centre of the boat. A wireless telegraphy



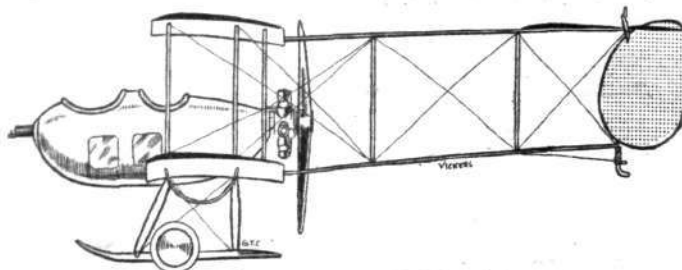
The 200 h.p. Sopwith flying boat.

outfit is fitted, driven by a Motosacoche engine, the whole of the apparatus being placed under cover immediately in front of the pilot. The machine is stated to be capable of climbing at the rate of 500 ft. per minute, and weighs 2,300 lbs. when empty, the useful load being about 1,000 lbs.

## Vickers (Vickers, Ltd.). (66.)

THERE will be two machines exhibited by Messrs. Vickers on their stand, one of which will be a two-seater fighting biplane with the engine and propeller to the rear of the wings, while the other will be a tractor biplane. The former will be constructed of steel practically throughout, as the main spars, fuselage and landing chassis

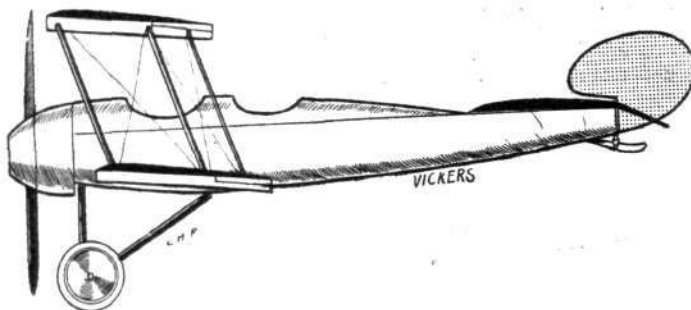
are made of that material, and only the ribs and skids are manufactured from wood, as was the case with the fighting machine shown last year. This machine will have a Maxim gun fitted in the front, the gunner occupying the front seat and the pilot the rear. Various



The 100 h.p. Vickers biplane.

improvements have, however, been made in the design of this machine, and these we shall deal with fully in subsequent numbers of FLIGHT.

The tractor machine has a fuselage and main spars of wood, but the landing chassis is built of steel and is a very simple Vickers type, the wheels being suspended on rubber cord. It will be observed



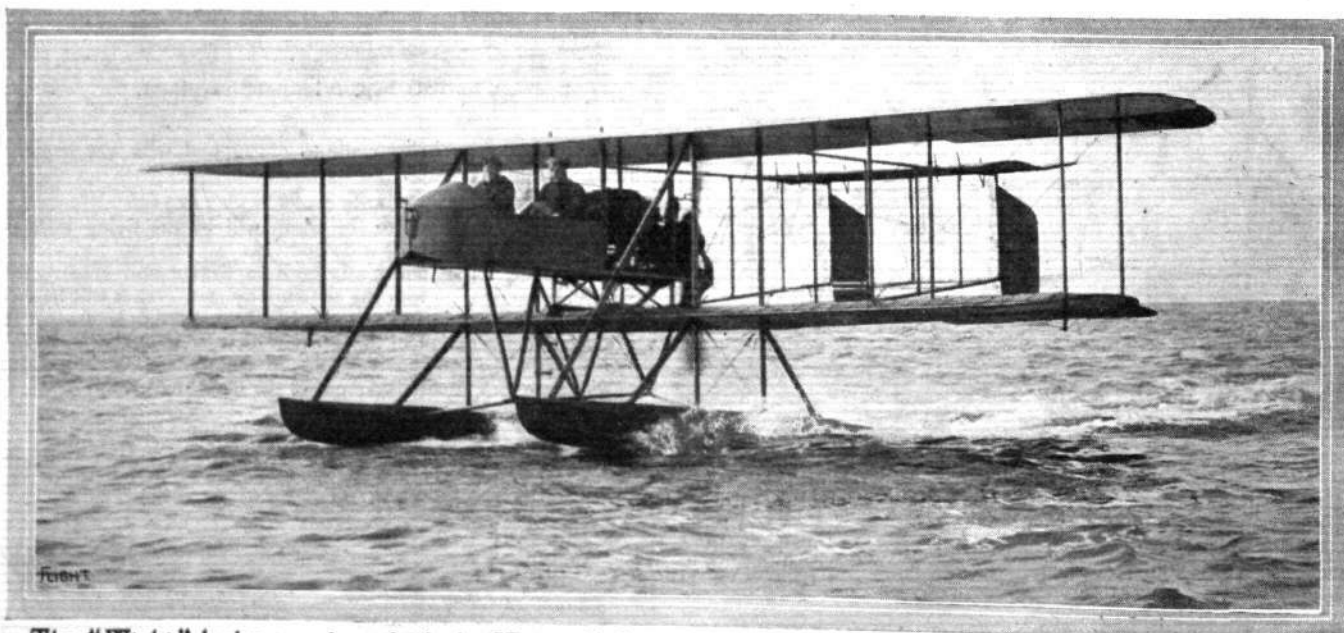
The 100 h.p. Vickers tractor biplane.

that a very wide speed range is claimed for this machine—from 100 to 45 miles per hour—and we shall look forward with interest for information regarding its performance. The wings on this machine are staggered. Both machines will be well up to the usual standard of excellence and finish found in the work turned out by this eminent firm of constructors.

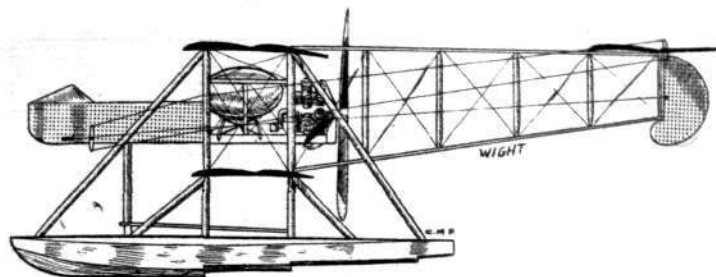
On the same stand various sizes of Vickers-Levasseur propellers will also be shown.

## Wight (Samuel White and Co.). (39.)

THE Wight seaplane exhibited by Messrs. Samuel White and Co. will be somewhat similar to the machine shown in incomplete



The "Wight" hydro-aeroplane, built by Messrs. J. S. White and Co., of Cowes.—A slightly modified design will be seen at Olympia, the principal alterations being the fitting of a 200 h.p. Canton-Unné engine and the provision of two additional struts between the floats and the upper planes at the rear of the machine.



The 200 h.p. Wight seaplane.

form at last year's Aero Show, although, of course, several alterations suggested by a great amount of flying during the past season have been effected. Most interesting, from an aerodynamical point of view, is the peculiar double-cambered wing section which several people were rather inclined to scoff at last year but which has since proved its worth. In fact so pleased is its designer, Mr. Howard T. Wright, with it that he has applied it to the propeller also, and with equally good results. We understand that this propeller has been tried against several well-known makes and has proved superior to them, at least for this particular machine.

The engine fitted on this year's machine is a 200 h.p. Salmson mounted at the rear.

## AERONAUTICAL ENGINES AT OLYMPIA, 1914.

Maker.	Country of Origin.	Type.	Form of Cooling.	Horsepower.	Revs. per min.	Period of Test.	Fuel consumption per B.h.p. hour.	Cylinders.			Jacket.		Valves.				Car- burettor.		Magnet.	Lubrication.	Weight with acces- sories, ex radiator		
								Number.	Bore.	Stroke.	Material.	How attached.	Material.	Position.		How operated.		No.				Type.	
														I.	E.	I.	E.						
Anzani...	F	Ra	A	60	1250	—	0.63	10	90	120	CI	—	—	Head	Head	Auto	R & PR	—	Zenith	2	Gibaud	Pump	242
"	"	"	"	100	1250	—	0.63	10	105	145	"	—	—	"	"	"	"	—	"	2	"	"	363
"	"	"	"	125	1250	—	0.63	10	115	155	"	—	—	"	"	"	"	—	"	2	"	"	464
Argyll ...	GB	Vert	W	120	1200	6.0	6	125	175	175	St	—	Steel	—	—	Single sleeve	—	2	"	2	Bosch	F & T	600*
Austro- Daimler	"	"	"	90	1300	6.0	6	120	140	140	CI	Electrolytic	Copper	Head	Head	R & PR	R & PR	2	AD	2	"	"	405†
Benz ...	G	"	"	120	1200	6.0	6	130	175	175	"	—	—	"	"	"	"	2	"	2	Bosch	"	540†
Clement	F	"	"	95	1350	6.0	5.5	106	150	150	"	Welded	Steel	"	"	"	"	2	Benz	2	FF	"	365
Gnome	"	Ro	A	250	—	—	—	6	—	—	St	—	Copper	"	"	R	R	—	—	—	Pump	"	850
"	"	"	"	80	1200	—	0.73	7	124	140	"	—	—	Piston	"	Auto	R & PR	1	Gnome	—	Bosch	"	207
"	"	"	"	100	1200	—	0.73	9	110	150	"	—	—	Walls	"	Piston	"	1	"	—	"	"	276
Green ...	GB	Vert	W	65	1250	30.0	5.5	4	140	152	"	Rubbering	Copper	Head	"	R	R	1	Zenith	"	FF	"	298
"	"	"	"	72	1300	4.0	5.5	—	—	—	"	—	—	"	"	"	"	—	"	—	"	"	—
"	GB	Vert	W	100	1200	30.0	5.6	6	140	152	"	Rubbering	Copper	Head	Head	R	R	2	Zenith	Bosch	FF	440	
"	"	"	"	120	1300	4.0	5.6	—	—	—	"	—	—	"	"	"	"	—	"	—	"	"	—
Mercedes	G	Vert	W	105	1350	6.0	6	120	140	140	"	Integral	Steel	Head	Head	R	R	1	Mercedes	2	Bosch	FF	444
Renault	F	V	A	70	1800	—	0.64	8	96	120	CI	—	—	At side	At side	Direct	Direct	—	—	—	—	F & S	399
"	"	"	"	100	1800	—	0.64	12	96	140	"	—	—	"	"	"	"	—	—	—	—	"	639
Salmson- Canton- Unné	"	Ra	W	90	1250	—	0.61	7	120	140	St	Brazed	Copper	Head	Head	R & PR	R & PR	1	—	—	Bosch	Pump	375
"	"	"	"	130	1250	—	0.61	9	120	140	"	"	"	"	"	"	"	1	—	—	"	"	463
"	"	"	"	200	1250	—	0.61	14	120	140	"	"	"	"	"	"	"	2	—	—	"	"	660
"	"	"	"	150	1250	—	0.61	9	120	150	"	"	"	"	"	"	"	1	—	—	"	"	—
Sunbeam	GB	V	"	150	2000	—	0.6	8	90	150	CI	Electrolytic	Copper	Side	Side	R	R	2	Claudel	Bosch	F & S	480	
"	"	"	"	225	2000	—	0.6	12	90	150	"	"	"	"	"	"	"	4	—	—	2 Bosch	"	—
Statax ...	"	Ro	A	10	1400	4.0	7	3	58	60	St	—	—	Head	Head	Direct	R & PR	1	G & A	—	Bosch	Pump	60†
"	"	"	"	40	1200	8.0	5.8	5	100	120	"	—	—	"	"	"	"	1	"	—	"	"	200
Wolseley	"	V	A&W	75	1800	4.0	7	8	3 3/4	5 1/2	"	—	—	"	"	R & PR	"	1	Claudel	"	F & S	"	385
"	"	"	W	30	1200	4.0	6.3	8	5 1/2	7	"	Jointed	Copper	"	"	"	"	1	"	"	"	"	720

GB = Great Britain.

G = Germany.

F = France.

Vert = Vertical.

Ro = Rotary.

Ra = Radial.

V = Vee type.

A = Air.

W = Water.

St = Steel.

CI = Cast iron.

R = Rockers.

R &amp; PR = Rockers and push-rods.

F &amp; T = Forced to main crank-shaft bearings and trough.

FF = Fully forced.

F &amp; S = Forced to crank-shaft bearings and splash.

\* Including radiator.

† Including radiator and water.

‡ Including oil and petrol tanks.

## Argylls, Ltd. (33.)

THESE well-known motor car manufacturers will make their debut in the aeronautical industry with a 120 h.p. 6-cylinder sleeve-valve engine which has a bore and stroke of 125 mm. and 175 mm. respectively. The weight of the complete power unit including the radiator is 600 lbs. From the success that has been achieved by automobile engines embodying the form of valve with which this motor is fitted—in confirmation of which it is only necessary to refer to the world's records established by a 15.9 h.p. Argyll car at Brooklands during last May, in the course of which two runs each of 14 hours duration were made—we believe that the engine should prove very successful in the future, as valve trouble has been a prolific cause of engine failure in the past. The engine exhibited has been entered for the Military Aeroplane Engine Competition, and we look forward with interest to the results of tests with this motor, which, so far as we are aware, is the first sleeve-valve engine to be used in aeroplane work.

On the same stand, one of the first six experimental engines built by Messrs. Argylls, Ltd., will be exhibited as well as a sectional model showing the construction and method of driving the sleeve-valve.

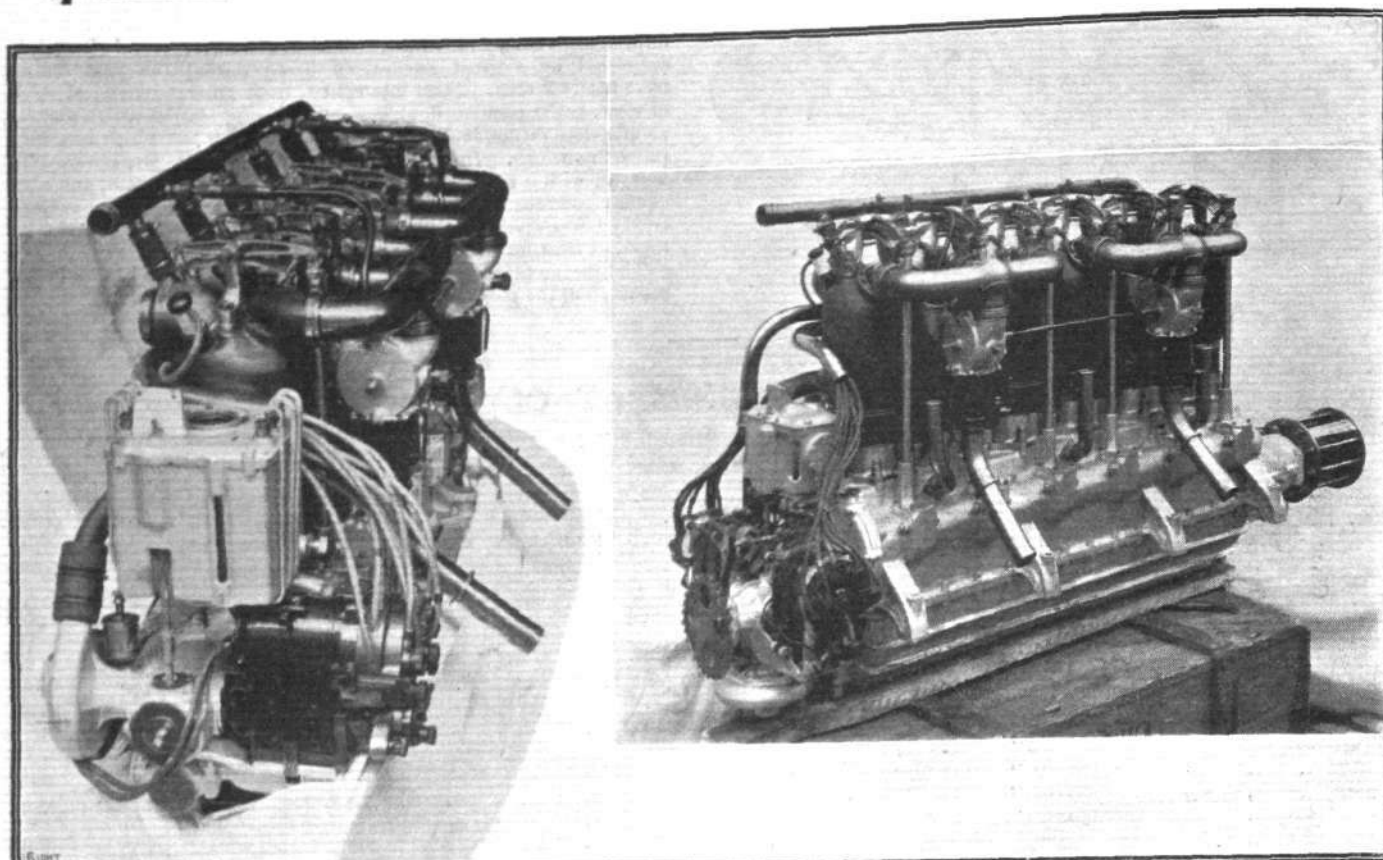
## Austro-Daimler Motor Co., Ltd. (87.)

THIS firm, as the sole agents for the Beardmore Austro-Daimler Aero Engines, Ltd., who now manufacture these engines in this country, will exhibit two six-cylinder models upon their stand—a 90 h.p. 120 mm. by 140 mm., and a 120 h.p. engine 130 mm. by 175 mm. Both of these designs have seen much aeronautical service not only in this country, where the War Office, the Admiralty, Messrs. Sopwith, Cody and others have been purchasers, but also abroad, so that their reliability has been thoroughly tested.

In the engines exhibited, various improvements have been incorporated, mainly in connection with the 90 h.p. motor, which is now more on the lines of the 120 h.p. engine, and in the construction of the cylinder. The original features which have so long characterised these engines are, however, retained.

Both engines are now provided with two-point dual ignition, which not only enables the engines to be started upon the switch (thereby avoiding the necessity for swinging the propeller except for the purpose of priming the cylinder) but also ensures the attainment of the maximum of power and precludes the possibility of the stoppage of the engine in the event of mis-firing at one set of plugs. Means are, however, fitted on both engines for hand starting by a 1 1/2 to 1





The 90 h.p. Austro-Daimler engine, and on the right the 120 h.p. Austro-Daimler engine. Note the method of attachment of the cylinders to the crankcase.

gear, in the case of the larger engine, and where this is dispensed with the gearing may be usefully employed for driving a dynamo for a wireless telegraphy apparatus.

Reference was made to the 120 h.p. engine in our issue for January 24th last, so that it will be merely necessary to note the recent alterations that have been made. The cylinders are now machined both externally and internally so as to avoid any distortion due to heat on unequal thicknesses of metal, and as before, are fitted with an electrolytically deposited copper jacket, whilst a pressed steel flange is screwed on to the bottom of the barrel and attached to the crank-case by seven holding down bolts. The copper jackets have been increased in thickness because of the hard usage to which they are subjected. Bosch lubricators are now fitted on the 90 h.p. model with which, it is claimed, oil pressures in the neighbourhood of 1,000 lbs. per sq. in. can be attained. These pumps are operated by a cam-shaped disc driven by helical gearing from the crank-shaft, and each lead from the pump is supplied by two piston plungers, the stroke of which may be varied, one plunger acting as a piston-valve and the other functioning as a pump. The leads through which the oil is conveyed are of weldless steel tubing. In order to minimise the risk of fracture of the rubber water circulation connections, long rubber joints have been inserted between the carburettor and the engine system. Sparking plugs are now entirely covered in with a large fibre cap and porcelain cover. Lastly, precautions have been taken to prevent the possibility of fire by making the intake tube of ample length and covering the orifice with gauze.

The performance of the 120 h.p. engine on the Cody biplane in the Military Trials is now a matter of history; but, as regards the 90 h.p. engine, it is interesting to recall the fact that it was subjected to two tests by the Austrian Army authorities, each test being of 20 hours duration, and under full power. The engine was direct-coupled to a propeller, and the intervals between the tests was only half-an-hour. It says much for the design of the engine that, on being dismantled, all working surfaces were found to be in perfect condition.

This firm also market a 65 h.p. engine, weighing, complete with radiator, 255 lbs. which is listed at £495.

**Benz (Brompton Motor Co.).** (26.)

THE motor exhibited on this stand is an 85 h.p. vertical Benz, somewhat resembling in design the 100 h.p. engine that won the Kaiserpreis of £2,500 early last year—the principal differences being in the number of cylinders, and the arrangement of the

magneto, which are arranged transversely across the engine. Particular attention has been given to the valve gear, as an example of which we may mention that the valves are fitted with two springs, so that in the event of one failing to act through breakage, the other will continue to function, and thus prevent an immediate descent from being imperative. The crank-shaft is supported in seven white metal bearings—one between each crank—and is of ample dimensions, so as to reduce periodic vibration, while a thrust bearing is fitted on the shaft to enable the engine to be used either with a tractor or a propeller screw.

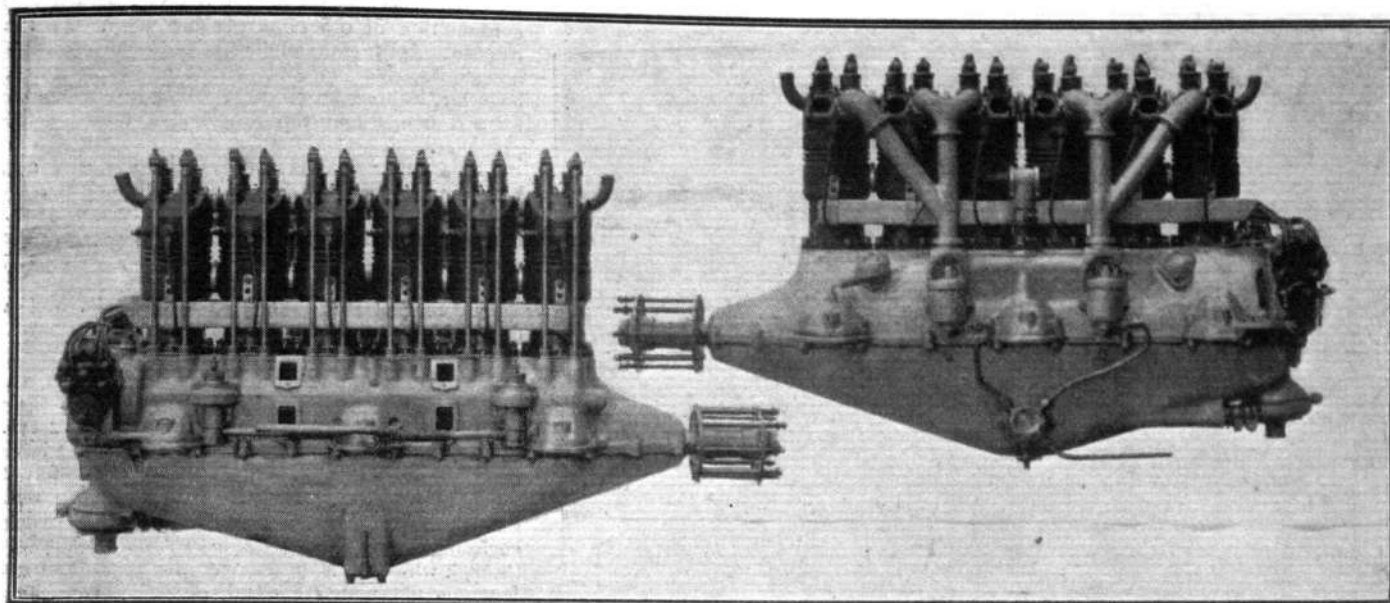
Two magnetos are provided, each connected to a separate set of plugs, the reasons for which are obvious. Pump water circulation is fitted, and the water pipes are conducted through the crank-case so as to eliminate the possibility of damage being done, and, it is stated, to keep the crank-case cool. The cylinders are grouped in sets of three for water cooling, as the inlet pipe branches off to the right and left set of three, passing from one cylinder to the next in each set. The air supply is drawn through the interior of the crank-case, *via* a channel that is protected from the oil therein, and passes to the carburettors, which are cast integral with the top half of the crank-starter. The air passing to the cylinder is thus warmed before admission to the carburettor and, at the same time, the temperature of the crank-case is kept down considerably.

The whole of the materials used are of the highest quality, the crank-case being cast from a high grade of aluminium alloy, the cylinder of special grey cast iron, and the shafting and valves of high grade steel. The rated horse power is developed at a speed of 1,200 revs. per minute, and 95 h.p. at 1,300 revs. per minute.

In addition to the 85 h.p., the Benz have two other models also having six cylinders—one of 100 h.p. and the other of 150 h.p., all practically of similar design. The former, with a bore and stroke of 116 mm. x 160 mm., respectively, weighs 425 lbs., whilst the latter, with a bore of 130 mm. and a stroke of 180 mm. scales 525 lbs. It is claimed that all these engines have a very low oil and fuel consumption, which claim was thoroughly substantiated by tests carried out during the German Aero Engine Competition held about twelve months ago.

**Clement Bayard.** (67.)

ON the stand of Messrs. Delacombe and Marechal, a Clement Bayard engine, which has been specially designed at the Levallois works for dirigible work, will be shown. It is of 250 h.p., and has six separate cylinders, each cylinder being manufactured from a single piece of steel on the Clement Bayard system. Water-cooling



100 H.P. BENZ AEROPLANE ENGINE.—On the left, the engine viewed from the exhaust side; and on the right, view from the inlet side.

is employed, the cylinders being copper jacketed, while circulation is assisted by a pump. Two sparking plugs are fitted to each cylinder, and a special compression release device is provided so as to facilitate starting.

#### Gnome Engine Co. (31.)

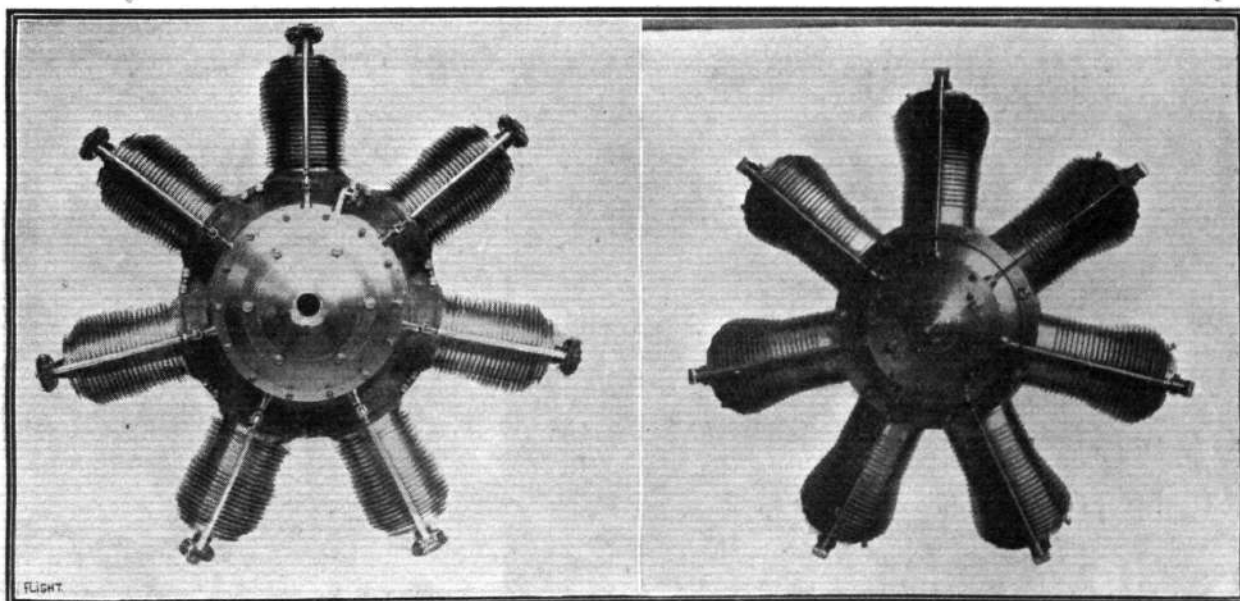
ON this stand the new 100 h.p. Monosoupape Gnome and the 80 h.p. 7-cylinder Gnome will be exhibited. The former made its first public appearance at the Paris Aero Salon in December last, and differs from the usual construction embodied in the Gnome engines, in that the inlet valves, which are ordinarily located in the heads of the pistons, are dispensed with, and ports are formed in the inner end of the cylinder walls through which a rich mixture is drawn from the crankcase, and by mixing with air entering *via* the exhaust valve (which remains open during induction) forms the explosive mixture in the manner described in *FLIGHT* for February 14th last. The weight of the engine together with that of fittings for a self-starter is 276 lbs., as compared with 298 lbs. for the 100 h.p. 9-cylinder Gnome of the usual design. The Société des Moteurs Gnome also manufacture a 7-cylinder 80 h.p. model of the "Monosoupape" type, and this engine is shown in the accompanying illustrations. Examples of the 80 h.p. motor will, however, be found at the Show fitted to the Avro Scout and the Bristol two-seater.

The 80 h.p. engine will be on the usual lines followed in Gnome practice, which are so familiar to our readers as to require no further explanation.

#### Green Engine Co., Ltd. (85.)

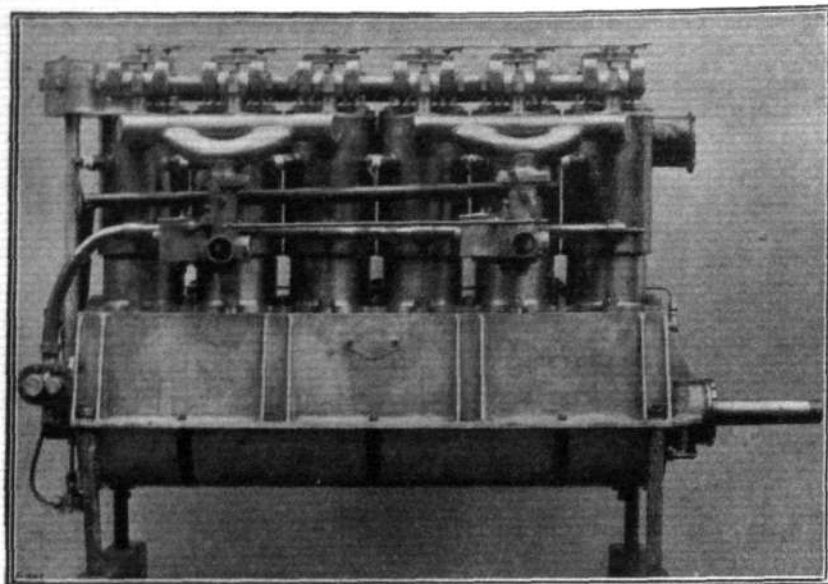
THE engines shown on this stand, No. 85, will consist of the 60-70 h.p. model that proved so successful in the Patrick Alexander Competition, the latest 120 h.p. six-cylinder engine, one of which design was fitted to the Sopwith hydroplane in the Circuit of Britain Race last year, and a small dynamo set.

It is hardly necessary to dilate upon their excellent qualities, as they have proved themselves to be so thoroughly reliable and efficient for both land and sea service, and those improvements which have been more recently incorporated in the design are such as will be introduced into any machine by the natural process of evolution. These may be briefly summarised by saying that the crank-shaft has been stiffened—not because it was necessary, but so as to give greater rigidity to a part that has to work under exceptionally severe conditions; the reciprocating parts have been lightened, thereby reducing vibration to a negligible quantity; and the air intake has been constructed so that the inlet orifices to this chamber come close up to the cylinder walls and cause the air to be drawn from around the uncooled portion of the cylinder walls, thus keeping these parts much cooler and assisting lubrication. The quantity of air passing in this manner can be regulated by a sleeve, any diminution in the air drawn through these ports being compensated for by air entering through other ports. All these engines are fitted with fully forced systems of lubrication and have dual ignition for facilitating starting.



GNOME ENGINES.—On the left is the 80 h.p. Monosoupape engine, and on the right, the ordinary 80 h.p. model.





The 120 h.p. Green engine.

In addition to the above, a 60-70 h.p. engine completely dismantled will also be shown. It is worthy of note that the 120 h.p. exhibited will be the actual engine that is to take part in the Military Aeroplane Engine Competition next month. The confidence of this Company in their engines is shown by the exceptionally long test to which they are prepared to subject them, namely, 30 hours.

The small dynamo outfit above-mentioned will consist of a small Mackie Alternator driven by a 2½ h.p. self-contained engine—the radiator forming part of the water jacket round the cylinders such as has been used for some years past on motor-cycle engines. The designed speed is 2,100 revs. per minute, and the engine has a bore and stroke of 70 mm. and 90 mm. respectively. It is claimed that this outfit will run for long periods without any signs of overheating, and the current generated may be used for wireless purposes on aircraft or for lighting installations on airships, yachts, &c.

We understand that the Green Engine Co. have another engine in an advanced stage of manufacture—a 12-cylinder (140 mm. × 165 mm.) of 250-270 h.p., weighing, complete with radiator, about 900 lbs., and we believe that there is ample scope for such an engine, especially for the hydro-aeroplane service.

On the Grahame-White Stand, the engine fitted to the machine on which Mr. Grahame-White won the Michelin Competition last year (which makes their seventh success in these competitions) will be exhibited; while the 100 h.p. engine used by Hawker in the Circuit of Britain, will also be shown on the stand of Messrs. Sopwith Aviation Co.

**Mercedes (Milnes-Daimler-Mercedes, Ltd.). (34.)**

In addition to a marine motor, this firm are showing only one engine—a 100 h.p. 6-cyl. Mercedes aeroplane engine, that develops

its rated power at about 1,300 revs., with a fuel consumption of 0.6 pints per h.p. hour. This is listed at £585 complete with full equipment of accessories, but without radiator. The price, however, includes an oil tank, holding sufficient oil for a 6 hours' non-stop run, and a boss for the propeller.

Three other motors for aeroplane work are, however, manufactured of 70, 80 and 90 h.p., the 80 being a 6-cyl., while the others are 4-cyl. engines. Their respective weights are 308, 312 and 400 lbs., and they are quoted at £385, £485 and £510 respectively.

Two magnetos are fitted on all models, and a 6 hours' non-stop test is guaranteed.

**Renault, Ltd. (32.)**

MESSRS. RENAULT, LTD., are showing their 8-cyl. 70 h.p. engine and a 100 h.p. 12-cyl. engine, similar in general design to those that have been already extensively used on many different types of machines. These engines, as is so well known, are of the vee type, and have a casing enclosing the space between the two sets of cylinders through which air is drawn over the cylinders by a fan mounted upon the end of the crank-shaft. The propeller, as has always been the practice on

this engine, is driven off the cam-shaft.

Another model of 40 h.p. is manufactured embodying a similar design to the larger engines.

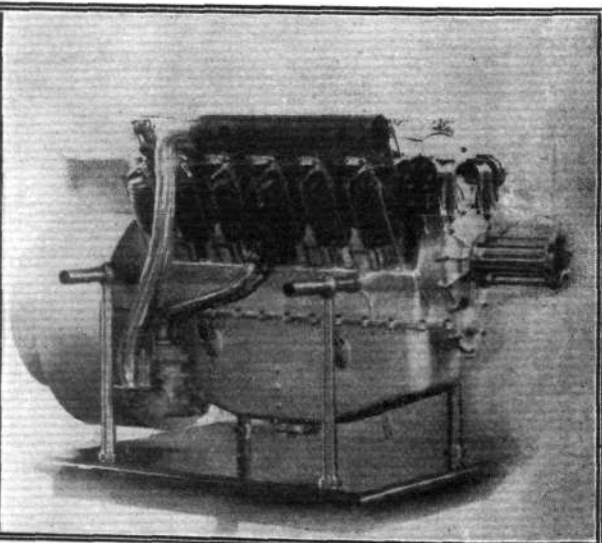
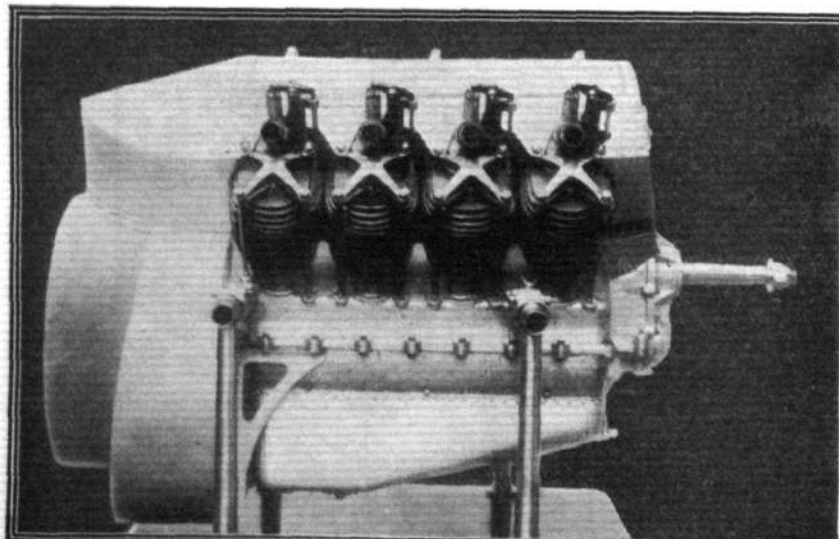
**Salmson-Canton-Unné (Dudbridge Iron Works). (35.)**

THERE will be five exhibits on the Salmson stand of 90, 130, 150 and 200 h.p., as well as a sectioned model of the 90 h.p. engine for the purpose of showing the internal mechanism embodied in these motors. All of these engines are of the radial type, and are water-cooled, but the 150 h.p. engine is fitted with a bevel reducing gear so that the cylinders lie in a horizontal plane. A full description of these engines appeared in FLIGHT for February 21st last, in our description of the engines at the Paris Aero Show, and as they have not since been altered in design it is unnecessary to repeat our remarks thereon here. A 200 h.p. engine may be seen mounted on the Sopwith bat boat.

We may mention, however, that Messrs. the Dudbridge Iron Works, Ltd., have now undertaken the manufacture of these engines in this country, and have entered for competition in the Military Aeroplane Engine Trials.

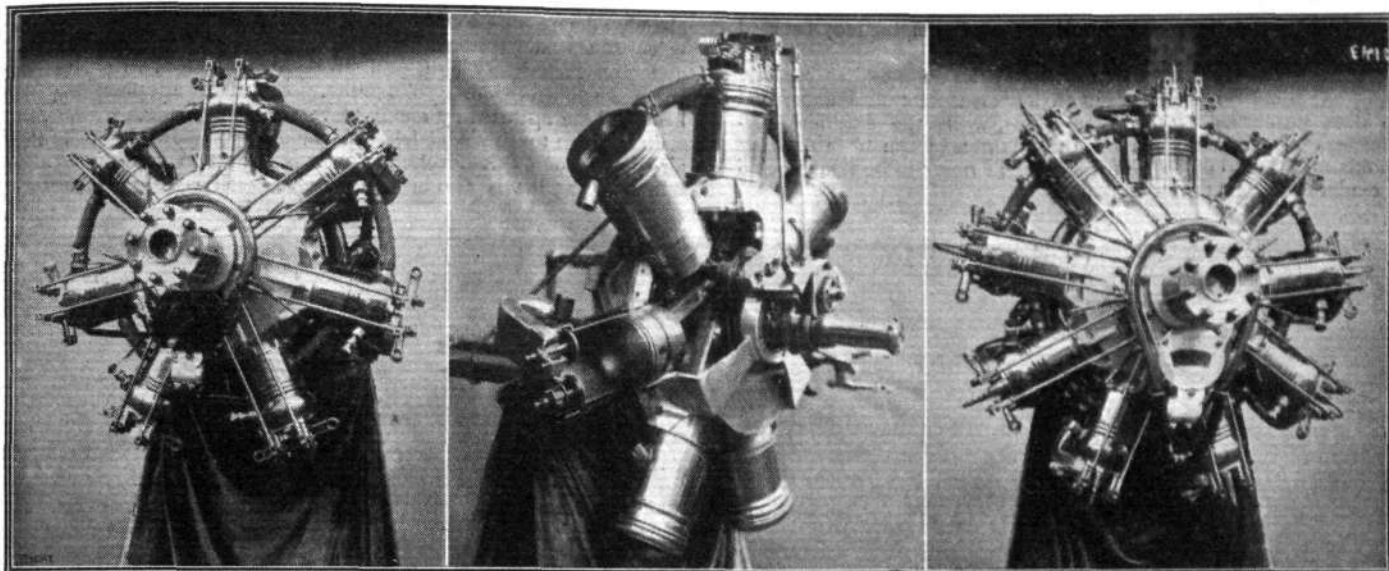
**Statix Engine Co., Ltd. (89.)**

THIS firm is a newcomer to Olympia, and are showing two engines, one of which is a 10 h.p. and the other a 40 h.p. engine. These are of the rotary type, and are air-cooled, the cylinders being arranged parallel to the axis of rotation, so that the connecting rods are attached by means of a universal joint to a "wobble gear" in a similar manner to that used on the Salmson engine exhibited at the last Aero Show at Olympia. The great advantage of this arrangement lies in the low air resistance offered by the engine both to forward as well as rotary motion.



The Renault Engines.





**SALMSON ENGINES.**—On the left is the 90 h.p. model, and the 130 h.p. engine is seen on the right. The engine shown in the centre is a 90 h.p., with a portion of the cylinder and crankcase removed so as to show the internal construction.

There are several features of interest in this engine, not the least among which is the method of attachment of the aluminium fins to the cylinders—the latter being, in effect, mounted in these cooling discs, thus forming an integral rotating mechanism. Also the piston rods are so arranged that they tend to keep the cylinders against the walls of the cylinders nearest to the axis of rotation; whilst the disposition of the inlet and the exhaust is such that the centrifugal force due to the rotary movement of the engine assists in closing the valves.

We hope to deal with this engine more fully in an early number of FLIGHT.

#### Sunbeam Motor Car Co., Ltd. (28.)

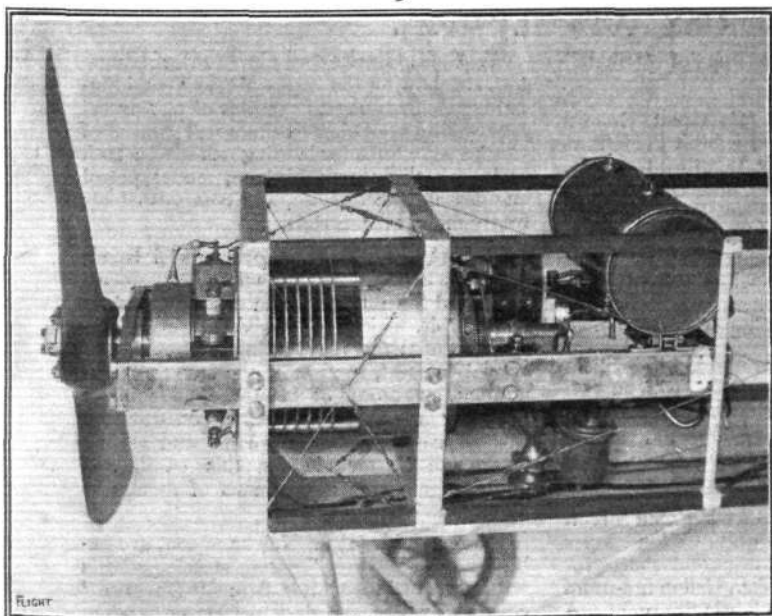
THIS well-known firm of automobile engineers who have achieved such great success in road and track racing, as well as in marine motoring, have entered upon the field of aeronautics during the past year with their 150 h.p. engine to which reference was made in FLIGHT for March 15th of last year.

The two engines exhibited will include the 8-cylinder 150 h.p. engine mentioned above, which has been entered for the Military Aeroplane Engine Competition, and a 12-cylinder engine developing 225 h.p. The construction employed resembles in large measure the conventional type of car engine, except for the vee arrangement, in that the cylinders are cast en bloc of cast iron, in groups of four for the 8-cylinder, and in four sets of three for the 12-cylinder

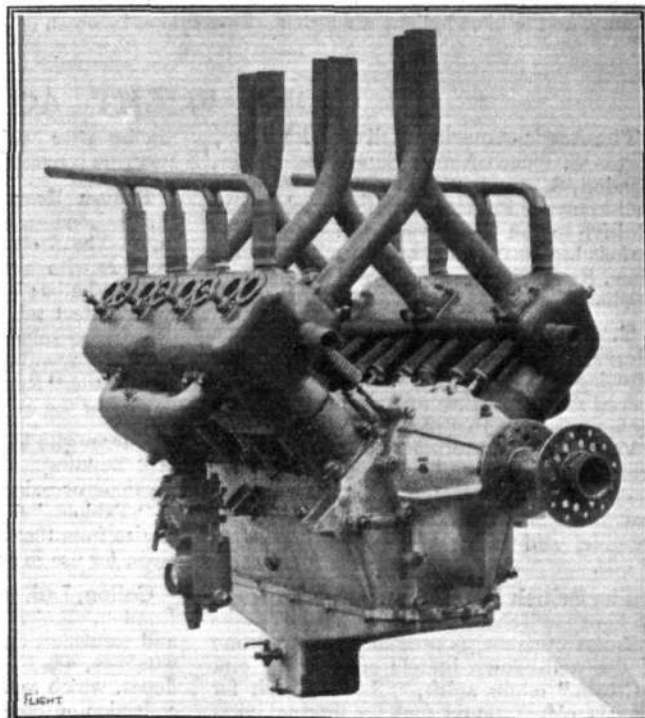
engine, but the jackets or the water cooling of the cylinders are of copper, electrolytically deposited. The pistons are machined from the solid, and the gudgeon-pin is provided with a central support from the head of the piston so as to render it possible to use a smaller, and therefore lighter, gudgeon-pin and connecting-rod. The lubrication is pressure fed by a gear-pump placed in the sump via the interior of the crank-shaft to all the shaft bearings. An oil lead is taken from the main lubricating circuit to the cam-shaft, so that oil floats over the valve mechanism and afterwards flows over the timing wheels into the crank-chamber. The cylinders are staggered so as to allow of the attachment of two connecting-rods to one crank, there being a bearing between each crank.

The magnetos, of which there are two on the larger engine, and one on the smaller, placed within the vee, are driven by spur gears, as are also the water and the oil pumps. Claudel Hobson carburettors are employed, on account of their successful operation in racing work, two being used on the 150 h.p. and four on the 225 h.p. engine—the inlet pipes between the carburettors and the cylinders being water-jacketed in both engines.

Standard propellers can be fitted in the nose-piece of the engine, and are run at half the engine speed on ball-bearings, a double-



The 10 h.p. Statax rotary engine, in which the axes of the cylinders lie parallel to the axis of rotation.



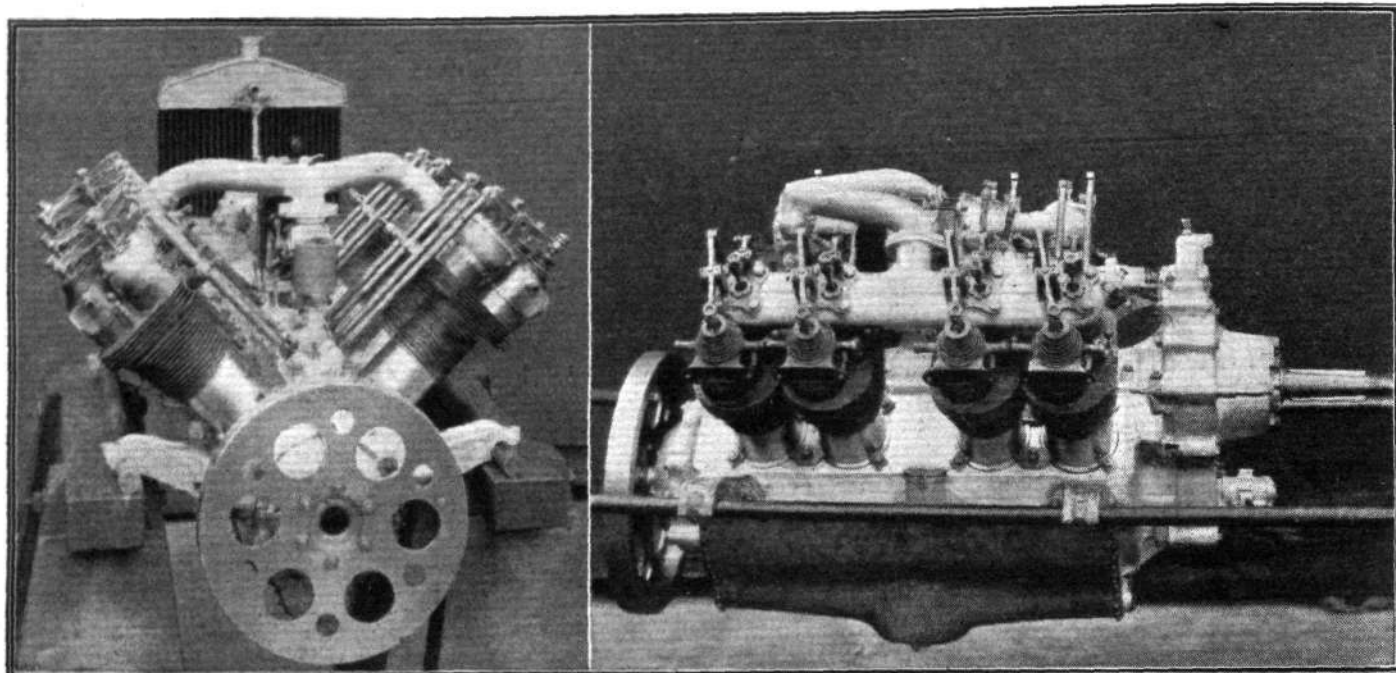
150 h.p. Sunbeam Vee engine.

thrust ball-bearing being also fitted so that the engine may be used either for a tractor or a pusher type of machine.

We may observe that one of the smaller engines has recently undergone some very severe tests at the Royal Aircraft Factory and has been purchased by the War Office, while the excellent performances of the Sunbeam on the Maurice Farman biplane at Brooklands need only to be mentioned in order to be remembered by readers of FLIGHT.

already done considerable service. Cylinders, cylinder heads, valve boxes and pistons of both engines are of forged steel, giving an exceedingly light and strong construction, the cylinders being machined from the solid billet. All valves are placed in the head and are operated by rocking levers and push rods.

In addition to these models, an engine of similar design to the air-cooled motor but developing 90 h.p. at 1,800 revolutions and weighing 385 lbs. is also manufactured, as well as a 90 h.p. water-



**WOLSELEY SEMI-AIR-COOLED 60-80 H.P. ENGINE.**—Note the small radiator mounted on the engine for the cooling water circulating round the exhaust-valve pockets.

## Wolseley Tool and Motor Car Co., Ltd. (58.)

Two aero-engines will be exhibited on this stand. The first, which is designed for use on aeroplanes, will be similar to that which made its appearance at the last Olympia Show, an eight-cylinder, vee, air-cooled engine, with water cooled exhaust valve boxes—the propeller being driven off the end of the cam-shaft. A small radiator is provided and attached to the engine, so that the power plant is a complete unit. The second engine is an eight-cylinder water-cooled engine developing 130 h.p. at 1,200 revolutions per minute, and is intended for airship work—a sphere in which it has

cooled engine designed on the same general lines as the 130 h.p. motor, except that it runs at speed of 1,800 revs. per minute. All of these are of the vee type with pump lubrication to the three white metal crank-shaft bearings, while the weight of the 90 h.p. is 405 lbs. The camshaft runs in roller bearings and is fitted with a ball-thrust bearing to take the propeller drive except on the 120 h.p. engine, where the propeller is coupled direct to the crank-shaft. In the case of the 90 h.p. water-cooled engine the propeller can also be, if desired, driven off the crank-shaft.

## SOME FLIGHT ACCESSORIES AT OLYMPIA.

**The Anglo-American Oil Co., Ltd. (75),** of 36-38, Queen Anne's Gate, Westminster, London, S.W., are displaying samples of the well-known "Pratt's Perfection Spirit." In addition to the above they will be showing various brands of their refined oils:—White Rose, Royal Daylight, Crown Diamond and Gladiator, also oil cookers and heaters.

**S. Bowley and Son (108),** Wellington Works, Battersea Bridge, London, S.W., are showing motor spirits, lubricants, and a special range of paints and varnishes suitable for aircraft. Another speciality will consist of "Varniflex," a waterproof film or dope for protecting aeroplane fabrics and balloon or airship envelopes. Its main features are that it is claimed not to peel, crack or crumble, and resists the destructive action of oils.

**The British Petroleum Co., Ltd. (109),** 22, Fenchurch Street, London, E.C., will have a display of packages used in the distribution of the well-known brands of "Shell" and "Crown" motor spirit, "Swan" spirit for air gas plants, liquid fuel for internal combustion engines, a model of drilling rig and derrick, model tank steamer, and a case of

Shells, after which the line of "Shell" steamers is named.

**Brown Bros., Ltd. (6),** Great Eastern Street, London, E.C., will exhibit the following:—The Brolt Electric Lighting Dynamo, together with switch, and searchlight using integral bulbs; lathes and small tools, copper tubing, steel tubing, and material of every description suitable for either aeroplane or motor-boat work. A special exhibit will consist of the "Rapid" valve truer, a simple device for the easy reseating of valves.

**Burroughs Wellcome and Co. (4),** Snow Hill Buildings, London, E.C., will, as on previous occasions, be showing a collection of "Tabloid" first aid equipments, varying in size from that of a cigarette-case to larger sizes, for use in aerodromes, &c.

**Cellon, Ltd. (104),** of 17, Old Broad Street, London, E.C., will exhibit Cellon dopes and varnishes, Cellon transparent sheets for windows, wind-shields, &c., Cellon fire-proof dopes, which render the fabric fire-proof. A collection of photographs showing numerous aircraft employing Cellon specialities will also be shown.

**T.W. K. Clarke and Co. (10A),** of Kingston, are showing the James Means Visual Signalling Apparatus and samples of oxy-acetylene welding. Other exhibits will consist of Clarke wide hubs for landing wheels, a 10th scale model Farman biplane, model petrol engines and accessories, and compressed air rotary motors for models.

**Robert Coan (13),** 219, Goswell Road, London, E.C., is well known in the engineering world for his aluminium castings, and so his exhibit, which will consist of every description of castings in aluminium, should be of special interest, in view of the fact that aluminium, on account of its lightness, is suitable in many ways for aeroplane construction. Special castings for aeroplane and airship work will be included in this exhibit, in addition to various specimens of repairs to aluminium castings.

**Dover, Ltd. (1),** of Northampton, are exhibiting the "Dover" patent steering wheels with spiral-ribbed non-flam "Doverite" covering, which affords a perfect grip when wearing aviation mittens or thick gloves. This wheel is perfectly rigid and symmetrical, and is both light and strong, being, there-



fore, especially suitable for aircraft. Dover wheels are supplied to the R.A.F. Other exhibits will consist of Exonite lever handles, transparent Exonite sheets, wind screens, non-flam "Doverite" dopes, lacquers and varnishes, Exonite covered stranded wires, and Exonite tubes and rods.

**A. Dunhill, Ltd. (45),** 395, Euston Road, London, N.W., are exhibiting a full range of their aviation clothing and accessories, especially leather suits and helmets. The latest thing in compasses, altitude recorders, gradometers, maps, &c., is to be seen among the accessories, while the clothing section provides many new practical features.

**The General Aviation Contractors, Ltd. (48),** of 30, Regent Street, London, S.W., will not be exhibiting any of the numerous specialities handled by them and their subsidiary companies, but their stand will be in the form of a reception room, representing the work effected in aeronautics by this company, the British Anzani Engine Co., Ltd., the British Emaillite Co., Ltd., in England, and the Agenzia Generale Forniture Aeronautiche, and the Societa Anonima Construzione Aeronautiche "Savoia" in Milan. Anzani engines and Emaillite need no comment here, but we might mention that among the "G.A.C." specialities are Gnomol, which is finding increasing favour for use with Gnome and other aerial motors, the famous Rood aviation clothing, and various types of aeronautical instruments, full particulars of which will be obtainable on this stand.

**The Glacier Anti-friction Metal Co., Ltd. (15),** as their name implies, are exhibiting a full line of die-cast bearings, and various samples of Findlay's special motor metals, which are used for lining the bearings of aeroplane engines, &c.

**Hewlett and Blondeau (73),** Omnia Works, Vardens Road, Clapham Junction, S.W., will have on their stand a great assortment of component parts and fittings for aeroplanes, such as complete tanks, wire and cable, bolts, ferrules, cable fasteners, wire strainers, &c. The firm make a speciality of oxy-acetylene welding, and some samples of the work done in this way will be seen. There will also be a number of accessories, such as inclinometers, revolution counters, &c., together with samples of canvas, dope, castor oil, &c.

**The Hoyt Metal Co., Ltd. (98),** of 26, Billiter Street, London, E.C., are showing Hoyt's I.C.E. (Internal Combustion Engine) lining metal specially recommended for use in aero engine bearings, also other grades of Hoyt's standard Babbitt or anti-friction metals suitable for the same purpose. Another speciality will be Hoyt's die-cast bearings in No. 11 and I.C.E. metals, cast in specially designed machinery and true to .001 in.

**Henry Hughes and Son, Ltd. (47),** 59, Fenchurch Street, London, E.C., will be showing a full range of Clift aeronautical instruments, such as compasses, air speed indicators, course setters, instrument boards, &c.

**The Integral Propeller Co., Ltd. (21),** 307, Euston Road, London, N.W., will be exhibiting a large assortment of Integral (Chauviere) tractors and propellers of various diameters, together with a good display of metal-tipped patterns suitable for waterplane work. They will also be giving practical demonstrations of the new variable pitch propeller invented by M. Chauviere, which is specially adaptable for dirigibles. The exhibit will also include an armoured pro-

peller for warplanes, and a very neat contrivance invented by M. Chauviere in the form of a quick expelling nut to be used in connection with the standard metal bosses. This contrivance enables the aviator to fix the propeller to the engine with the least possible delay and guarantees the maximum safety.

**Lang Propellers, Ltd. (14),** of Riverside Works, Weybridge, Surrey, who specialise in propellers, and propellers only, will exhibit the following:—12 examples of standard types of aeroplane propellers for all well-known machines; examples of their new patented process for copper tipping propeller blades for hydro-aeroplanes; examples of fabric-tipped blades; 2 B.E. 4-bladed propellers, as supplied to H.M. War Office, one finished and one in lamination form, showing construction.

**Arthur Lyon & Co. (9),** of Caxton House, Westminster, will exhibit a patent daylight signal lamp which is used for signalling from aircraft and for use at night in landing airships. Also, a Steven's-Lyon self-contained and portable signal lamp that weighs only 6½ lbs. Various forms of oxy-petrol and electric arc searchlight will also be shown, together with an L.F. dynamo lighting equipment, which will be in operation.

**Wm. Mallinson and Sons, Ltd. (5),** 130-138, Hackney Road, London, N.E., will be showing specimens of their stocks in aeroplane timbers, including silver spruce, ash, hickory, mahogany, teak, cedar, elm, cypress, poplar, white wood, and yellow pine. They will also have samples of three-ply wood, all thicknesses, special thin cedar and mahogany for floats, and walnut and mahogany for propellers.

**Richard Melhuish, Ltd. (2),** 50, Fetter Lane, London, E.C., will have a very complete display of machinery and tools as used in the manufacture of aircraft. A special feature will be their nippers for cutting aeroplane wire.

**The Motor Radiator Manufacturing Co. (36),** Warwick Road, Greet, Birmingham, will show two types of radiators, and a ballast gainer for dirigibles. One type of radiator is of the well-known Zimmermann or honeycomb system, whilst the other type is of the flat tube pattern. The cooling area required by a Zimmermann radiator is 2 sq. ft. per h.p., and that by the flat tube type is 1 sq. ft. per h.p. The advantage of the former type is that they are much stronger and more compact. The ballast gainer is an apparatus to regain the weight in water of the spent petrol, by means of condensing the exhaust, thereby doing away with the very dangerous, and expensive method of releasing the gas, whilst less power is required for descending.

**Nicols, Neilsen and Co., Ltd. (16),** 14, Soho Square, London, W., will be showing various instruments for use on aircraft, including the Watford revolution indicator, trip chronographs, &c.

**Joseph Owen and Sons, Ltd. (11),** 199A, Borough High Street, London, S.E., will be exhibiting all kinds of timber for aeroplane work. Silver spruce, English ash, mahogany and walnut for propellers, poplar, whitewood and rock elm, also landing skids, &c.

**The Palmer Tyre, Ltd. (74),** 119-123, Shaftesbury Avenue, London, W.C., will be showing the Palmer Cord Tyres specially designed for aeroplanes, Palmer patent rims and wheels (also for aeroplanes), and the

Palmer patent quick detachable wind-shields. Another important exhibit will be an apparatus demonstrating the enormous loads and side strains Palmer wheels and tyres are capable of withstanding.

**Pettett's Patent Safety Filler Co. (97),** 46A, Regency Square, Brighton, will exhibit several patterns of safety petrol fillers which besides doing away with the use of funnels enables the fuel tank to be filled in the shortest possible time without waste.

**Price's Co., Ltd. (46),** Battersea, London, S.W. This firm's exhibit will include a complete range of their Standard Motor Oils embracing special Aero Castor Oil and Motorine, two brands of oil particularly suitable for aeroplane engines.

**Leo Ripault and Co. (37),** of 64A, Poland Street, London, W., will be showing a range of Oleo plugs suitable for aero engines, in particular the plug used as standard on the Gnome engine which is made to prevent oiling up, sooting and pre-ignition. Other exhibits will consist of ignition cable, the latest type of "Achilles" carburettor. Various specialities appertaining to marine work will also be shown.

**Rubery, Owea and Co. (17),** Darlaston, will have a large assortment of aeroplane fittings on view, including the following:—Rubery Owen patent release gears, Fox's patent wire-bending pliers, "Short" patent wire strainers, special strainers to R.A.F.'s specification, ordinary and special large steel strainers, steel lock-nut strainers, eyebolts, steel cable ends, quick release bolts, all kinds of bolts and nuts, special bolts fitted with lubricators, engine plates and housings, light steel ribs for aeroplane wings and planes, tubular rudder framework, light pressed channels and angles, fuselage angle plates, tubes, sockets and lugs, &c.

**Rushmore Lamps, Ltd. (107),** 46, Brewer Street, London, W., will show Rushmore dynamo electric-lighting sets for motor boats and aeroplanes, searchlights, acetylene generators, electric horns and electric engine-starters.

**Samuel Bros., Ltd. (100),** 65, 67, Ludgate Hill, London, E.C., are showing an extensive range of aviator's clothing, including various garments made of the "Omne Tempus" rubberless rainproof cloth.

**The Skefko Ball-Bearing Co., Ltd. (13),** of Luton, will exhibit a large assortment of the "Skefko" patent self-aligning double-row radial bearings, plummer blocks, double and single thrust bearings with self-centring seatings, and several working models showing the self-aligning, &c., properties of the "Skefko" bearings.

**The Stern-Sonneborn Oil Co., Ltd. (106),** Royal London House, Finsbury Square, London, E.C., will be exhibiting the special Sternol oils for Parseval and other airships, for aeroplanes, hydroplanes, motor boats, &c. Sternol Gearoline for gear boxes, Sternol transmission grease and Ambroleum for gear boxes, Sternol motor cup grease, &c.

**The Vacuum Oil Co., Ltd. (12),** Caxton House, Westminster, London, S.W., will display samples of the various Gargoyle Mobil oils for engine and gear lubrication, Gargoyle grease, and the patent Gargoyle grease cartridge.

**C. C. Wakefield and Co. (99),** of 30-32, Cheapside, London, E.C., are exhibiting samples of the "Castrol" lubricants. "Castrol" is specially recommended for Gnome and other rotary engines.



# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## INTERNATIONAL AERO SHOW.

The International Aero, Motor Boat, Marine and Stationary Engine Exhibition, organised by the Society of Motor Manufacturers and Traders, supported by the Royal Aero Club, will be held at Olympia from Monday, March 16th, to Wednesday, March 25th, 1914.

Members of the Royal Aero Club are admitted free on presentation of their membership cards.

A room in the Princes Gallery will be placed at the disposal of the Members during the Exhibition.

An invitation has been extended by the Royal Aero Club to the Non-Commissioned Officers and Men attached to the Naval and Military Wings of the Royal Flying Corps to visit the Exhibition. This invitation has been accepted by the War Office and the Lords Commissioners of the Admiralty on behalf of 40 Non-Commissioned Officers and Men of the Military Wing and 40 Petty Officers and Men of the Naval Wing. During the visit the men will be entertained to luncheon by the Royal Aero Club.

## Annual General Meeting.

The Annual General Meeting of the Members of the Royal Aero Club of the United Kingdom will be held on Tuesday, March 24th, 1914, at 4 o'clock, at 166, Piccadilly, London, W.

## AGENDA.

1. To elect the President, Vice-President, and Council for the ensuing year.
2. To announce result of Ballot for Committee.
3. To confirm the following alterations in the Club Rules:—  
No. 11. Meetings of the Committee. The Committee shall meet at such times as it may arrange, and a special meeting may be summoned at any time by the Chairman, *Vice-Chairman or, in case of emergency by the Secretary*, or on a requisition signed by one-third of the members of the Committee.

No. 12. The quorum of the Committee shall be five, *except in the case of a special meeting summoned in accordance with Rule 11, when the quorum shall be three.*

*Note.*—The alterations (which are indicated in italics) were passed by the Committee at its meeting on November 11th, 1913.

No. 7. Ballot Papers. Not less than seven days before the Annual General Meeting a ballot paper shall be posted to every Member. The ballot paper shall contain the names of candidates nominated for the Committee in the form of an alphabetical list. The same type is to be used throughout.

*Note.*—The Committee at its meeting on February 17th, 1914, altered this rule by deleting the concluding words, "but the names of retiring Members of the Committee shall be indicated by an asterisk."

## Committee.

The following members have been proposed for the Committee:—

Capt. R. K. Bagnall-Wild, R.E.	Norman Clark Neill.
R. M. Balston.	Com. C. R. Samson, R.N.
G. B. Cockburn.	Sir John Shelley, Bart.
Maj. J. D. B. Fulton, C.B., R.F.A.	A. Mortimer Singer.
Maj. F. Lindsay Lloyd.	T. O. M. Sopwith.
Robert Loraine.	The Marquess of Tullibardine,
Fred May.	M.V.O., D.S.O., M.P.
J. T. C. Moore-Brabazon.	

Members are reminded that a ballot paper for the election of nine candidates to seats on the Committee of the Club will be forwarded to them at least seven days before the date of the Annual General Meeting.

## Jacques Schneider International Maritime Race.

The following additional entry has been received and forwarded to the Aero Club de France:—

John Carbery.

166, Piccadilly, W.

HAROLD E. PERRIN, Secretary.

## FROM THE BRITISH FLYING GROUNDS.

### Royal Aero Club Eastchurch Flying Grounds.

MONDAY last week, 100 h.p. Sopwith, 80 h.p. Tractor and Short biplanes up.

Tuesday, 80 h.p. De Dion-M. Farman, 100 h.p. Short Tractor, 50 h.p. Avro, B.E. H. Farman, M. Farman and Sopwith machines up. About 8 p.m. when it was pitch dark, Com. Samson ascended in the 80 h.p. Short (No. 3), making a splendid flight, half the time being invisible except for the Gnome exhaust. After being up about 10 mins. he made a perfect landing, without any flares or assistance of any kind, at the Harty end of the ground.

Wind and rain Wednesday and Thursday, no flying. Friday half gale. Lieut. Seddon arrived from the Isle of Grain on a 100 h.p. Short Tractor.

Drizzly rain all Saturday morning, but M. Farman, Sopwith and Short machines up. Afternoon calm but misty, and Short, Sopwith, M. Farman and H. Farman up. A rather nasty accident occurred in the afternoon. Leading Artificer Bradford, when landing the 50 h.p. Avro, caught a lump on the ground with the point of the skid, turning over and smashing the machine, the pilot luckily escaping with a severe shaking.

Com. Samson and Lieut. Briggs left for Eastbourne on the 80 h.p. Le Rhone-Bleriot. Sunday, gale, no flying.

*Civilian Flying.*—The Hon. M. Egerton was up on Monday, Tuesday and Saturday on his 50 h.p. Short biplane.

Prof. Huntington was also out on Saturday making a very good flight.

### Brooklands Aerodrome.

ON Monday last week Mr. Alcock was on the Maurice Farman (100 h.p. Sunbeam) biplane. Mr. Raynham flew to Shoreham and back on the 80 h.p. Avro biplane with Mr. MacGeagh Hurst as a passenger. Mr. Barnwell was further testing the Vickers gun-carrying biplane, the passenger acting as gunner and firing a number of blank charges.

Mr. Alcock made a very fine cross-country trip on Tuesday with Mr. F. G. Clifton as a passenger, on the Maurice Farman biplane to Eastchurch (in 40 mins.), Margate (in 70 mins.), where the first

landing was made, a further stop being made at Whitstable for more petrol, at which place the pilot executed an excellent *vol plané* landing from 5,000 ft. On the journey being resumed fog was encountered at Eastchurch and the pilot wisely decided to stop. Most of the flight was made at an altitude of between 6,000 and 7,000 ft., and a snowstorm was experienced passing over Chatham. Mr. Knight was out on the Vickers biplane.

On Wednesday, Thursday and Friday no flying was possible.

Early on Saturday, Vickers and Bristol machines made a number of flights, and Mr. Raynham was flying morning and afternoon on the 80 h.p. Avro biplane.

Sunday was another blank day on account of heavy rain and strong winds.

**Bristol School.**—Tuition at this school was only possible early on Monday and Tuesday mornings last week, owing to the wind being too high for pupils to go out alone.

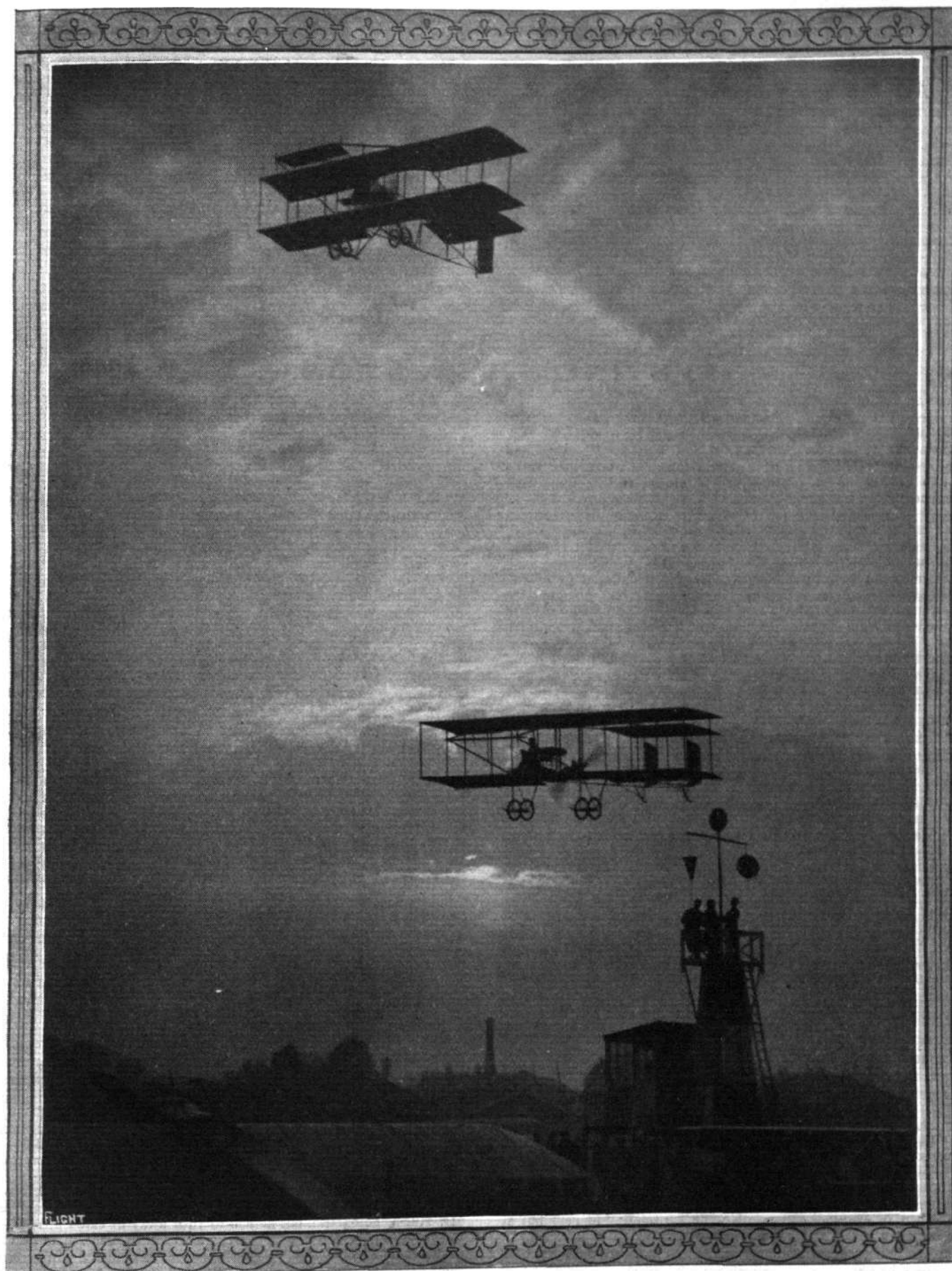
Sergt. Deane was out on Monday and Tuesday with Halford, practising banked turns and *vol plané* landings, the pupil having full control of the machine.

**Vickers School.**—Monday last week, Knight on biplane with Lieut. Mansergh and Mr. Wilberforce, each twice. Barnwell on gun-carrying biplane with passengers.

Tuesday, Knight test biplane 21, Elsdon test biplane 26 and with passenger.

Saturday, Knight and Elsdon on biplane with Lieut. Mansergh and Mr. Wilberforce, each twice. Knight with Lieut. Leighton (new pupil) twice.

**Sunbeam Activity.**—On Monday, March 2nd, J. Alcock made one flight in the morning with passenger at 1,500 ft., on the Maurice Farman fitted with 100 h.p. Sunbeam engine, and on the next day he started for Eastchurch with passenger, arrived there in 40 mins., at 6,000 ft., going through a snowstorm near Chatham. Afterwards flew to Margate and back to Eastchurch; whilst over Whitstable the motor stopped, ran out of petrol, so a spiral spurt and glide was made from 5,000 ft. into a small field. The passenger carried on this flight was Mr. F. G. Clifton.



AS EVENING DRAWS IN AT HENDON AERODROME.—Above, Mr. H. P. Carr, and below, Mr. M. D. Manton on Grahame-White biplanes rounding one of the pylons.

"Flight" Copyright.



## London Aerodrome, Collindale Avenue, Hendon.

**Grahame-White School.**—Monday, last week, Messrs. Francis, Kershaw and Norris solos straights, Mr. Dunne (new monoplane pupil) straights with Mr. Marty. Messrs. Kershaw, Cowley, Moore, Tapps, and Prince Sapieha straights with Instructor Birchenough in passenger seat. Messrs. Barrs and Graham solo circuits, &c.

Mr. Tapps straights Tuesday with Instructor Birchenough. Mr. Dunne straights on Blériot with Mr. Marty. Lieut. Lindop solo circuits. Messrs. Barrs and Kershaw solo straights and circuits.

Saturday, Mr. Barrs going in for *brevet* tests and gaining pilot's certificate. Mr. Parker and Prince Sapieha circuits with Instructor Cripps. Mr. Norris solo circuits.

**W. H. Ewen School.**—Monday last week, school out at 7 a.m. After a test flight by Mr. F. W. Goodden, Messrs. D. G. Murray and J. Bankes-Price did circuits. Mr. Warren test flight on 35 h.p. Caudron No. 1. Messrs. Garvin, Wiggett and Carruthers all doing good straights.

School out at 6.50 a.m. on Saturday. Test flight by Mr. F. W. Goodden, after which Mr. Murray did two circuits and Mr. Bankes-Price two circuits. Mr. Murray then did two more circuits.

## FLYING AT HENDON.

SEVERAL exhibition flights were made on Thursday afternoon of last week at Hendon, the pilots and machines being Lieut. Spencer Grey on the 90 h.p. Gnome-Sopwith, Louis Noel on the Maurice Farman, R. H. Carr on the G.-W. tractor biplane "Lizzie," and Philippe Marty on the 80 h.p. Morane-Saulnier. Marty met with a mishap exactly similar to that which happened to him some little time back. He was about to start on a flight, accompanied by L. Strange as passenger, and had taxied to the far end of the aerodrome, when just as he left the ground the right wing struck the ground. The machine made a cart-wheel, and then turned over on its back, imprisoning both occupants beneath. Dr. A. B. Leaky and members of the St. John Ambulance Corps, together with several mechanics and others, were soon on the spot, and liberated the unfortunate aviators. Marty was conscious, but very badly shaken, and suffering from slight concussion, whilst Strange escaped without injury. It was indeed a lucky escape for both.

The weather cleared up somewhat on Saturday afternoon last and the March Meeting went off without a hitch. Early in the afternoon the usual exhibition and passenger flights were made prior to the cross-country handicap. These were put up by Pierre Verrier on a new 80 h.p. Henry Farman intended for the R.F.C., R. H. Carr on "Lizzie," F. W. Goodden on the 45 h.p. Caudron, and J. M. Cripps on a G.-W. 'bus. "Lizzie," by the way, has been altered since our scale drawings appeared in *FLIGHT* last week. The lower plane has been increased in span by some eight feet or so, an alteration which has not, apparently, reduced the speed or affected the flying qualities of this remarkable little 'bus. At about 4 o'clock a start was made for the cross-country race, which was to Bittacy Hill and back four times, a distance of about 16 miles. Seven competitors lined up for this event, as follows:—L. Strange, on the twin-ruddered G.-W. 'bus (7 mins. 27 secs.); J. M. Cripps on G.-W. 'bus No. 109 (6 mins. 31 secs.); F. W. Goodden on the 45 h.p. Caudron (5 mins. 30 secs.); Louis Noel on the Maurice Farman (4 mins. 47 secs.); R. H. Carr on "Lizzie" (1 min. 47 secs.); Pierre Verrier on the 80 h.p. Henry Farman (1 min. 42 secs.); and Philippe Marty—quite recovered from his spill the previous Thursday—on the 80 h.p. Blériot (scratch). Strange maintained

**Hall School.**—Owing to wind and rain there has been very little practice during the past week. Lieut. Hall was out Tuesday testing No. 2 Caudron. On Wednesday, at 7 a.m., Virgilio essayed one straight flight, but wind proved too strong, and machines were returned to hangars. On Friday, early morning, while the wind dropped for a few minutes, Messrs. H. Gering, E. Palmer and Virgilio made three good flights, doing left and right-hand turns. Lieut. Hall made a few flights during week on Avro, and on Saturday gave an exhibition and passenger-carrying flight. At the close of the week the sheds were under water, and small rivers traversing the aerodrome, whilst planks and debris are being washed away from the vicinity of the hangars. A new "penguin" is now nearing completion, and has been fitted with folding wings so that it can be stowed away quite easily. It is fitted with 3-cylinder Anzani motor, Blériot fuselage, wings, *cloche*, elevator and controls.

## Salisbury Plain.

**Bristol School.**—No tuition was possible during all last week owing to the high wind accompanied by rain and snow. Much useful instruction was, however, given to the pupils in the sheds in the tuning up of machines, erection and dismantling, &c.

the lead throughout the race, and came in first, whilst Noel, who passed Goodden on the first lap, came in second 1 min. 18 secs. after. All interest, however, was centred round Carr and Verrier, whose machines showed very little difference in speed. In the first lap Verrier gained some two seconds on Carr and gained still more on the second lap, but after this, he lost several seconds, eventually giving up towards the end of the last lap. Carr, therefore, came in third, 41 secs. after Noel. Goodden, who flew very high, came in next, with Marty 22 secs. behind him, and Cripps came in last. After the racing a good deal of exhibition flying took place; Verrier, as soon as he gave up the cross-country race, proceeded to execute several *chute de côté* dives, whilst Goodden kept him company at the same game on the Caudron. J. L. Hall made a passenger flight on his Avro, but the engine not pulling well he retired to the hangar shortly after. Marty was also "stunting" on the Blériot, and the G.-W. 'buses were up time after time, the various G.-W. pilots being so numerous now that it was impossible to tell who was really in the pilot's seat. The last flight of all was one by Carr on Manton's bus, during which he put up some excellent spirals and banks.

Cross-Country Handicap. (16 miles.)		Handicap.	Handicap Time.
		m. s.	m. s.
1.	L. Strange (50 h.p. G.-W. biplane)	7 27	21 27
2.	Louis Noel (70 h.p. M. Farman biplane)	4 47	22 45
3.	R. H. Carr (50 h.p. G.-W. tractor biplane)	1 47	22 55
4.	F. W. Goodden (45 h.p. Caudron biplane)	5 30	23 36
5.	Philippe Marty (80 h.p. Blériot monoplane)	scratch	23 58
6.	J. M. Cripps (50 h.p. G.-W. biplane)	6 31	24 25
7.	P. Verrier (80 h.p. Henry Farman biplane)	1 42	retired

On Sunday the wind was blowing in gusts of about 40 m.p.h. with rain at intervals, but in spite of this there was a fair attendance of spectators and two flights were made for their benefit. These were made by Louis Noel, accompanied by a passenger, on the Maurice Farman, and R. H. Carr on the G.-W. tractor "Lizzie," who both made several circuits of the aerodrome.

## MR. B. C. HUCKS AT NUNEATON.

IN spite of rainstorms and a 40-mile wind, a very large crowd turned out to receive Mr. B. C. Hucks at Nuneaton on Thursday last week. Promptly at 3 p.m. the "Tornado" two-seater was brought out, and, shortly after, Mr. Hucks took the machine up to over 2,000 ft., indulging in vertical "banks" *en route*, the wind not seeming to bother him in the slightest. After 13 minutes demonstration flying of the most complicated character—he does everything but loop on this machine—Mr. Hucks spiralled down to earth again.

When the "looper" was released, it rose in ten yards and pitched and rolled in every direction. No-one expected "loops," but at 700 ft. Mr. Hucks dived vertically, and completed a perfect loop. Then another single, and finally a double, thus bringing his total up to date to 200 loops. Then another torrential downpour put an end to flying for the day.

On the following Saturday the weather was bright and clear, and over 10,000 people witnessed a full afternoon's flying. Mr. Hucks commenced with a solo flight on his 80 h.p. Blériot. A passenger flight followed, and the looper was then brought out by a squad of

local Territorials. Starting from the far corner of the ground, Mr. Hucks rose quickly, and at 500 ft. made his first loop. He followed this up with probably the most magnificent display of flying he has ever given. He did single, double and treble loops, side-slip recoveries, a thrilling "S" dive, returning to the normal position by a horizontal loop, and, finally, Mr. Hucks turned the machine over on its back and flew in that position for over a mile, a feat which caused the greatest excitement with the crowd.

After a rest he took up another passenger on his 80 for a tour of the district. On landing there were numerous applications for Mr. Hucks' autograph, but he had to rush away to catch a train to town. He, however, collected over £1 1s. for the Benevolent Fund.

For the first time since Mr. Hucks has given flying demonstrations in the provinces he had a real aeroplane hangar in which to house his machines, that erected by Mr. Mellor at Nuneaton, and afterwards presented to the town for the use of any airman who chose to land there and stay the night. We understand the aerodrome itself is also likely to be enlarged shortly by Mr. Bert Ward, who owns the property, and it will then be a really useful aerodrome.



# ARMCHAIR REFLECTIONS.

By THE DREAMER.

## Flying and Swelled Head.

ONCE I returned to my native village. I had left it as a youth—and a very bad one at that, and I wanted to go back. Had anyone asked me why, I should have said it was because I was interested in the place and wanted to see the familiar spots again; I have since come to the conclusion that it was nothing of the sort.

I had improved, I had got on, I could dress better, I wanted to astonish the natives; to let them see what London had done for me. It did not pan out worth a red cent. I could not create even a mild interest in my most worthy self.

I tackled the blacksmith first. He was at the bellows when I wished him a cheery good morning. He returned my greeting, and went on blowing. I ventured to suggest that he did not remember me, but he assured me that he did, and even mumbled something about "No cause to forget." He continued to blow, and did not seem interested, so I strolled to the smithy door and looked out, remarking that it was a fine day. He concurred, but did not look round. I strolled outside whistling, and—slipped off round the corner; no encouragement there!

In the one street the place could boast, I met my old schoolmaster; he remembered me at once. He shook my hand, and remarked that it was cleaner now than when he used to hold my little finger between his own thumb and finger, with a piece of paper intervening, march me up in front of the girls' class and say "Annie—, look at your brother's hands." It was but three miles to the station, I had plenty of time, I walked. The return fare from London was but eight shillings, and I never spent that amount more profitably—it took from me, for good and all, a little failing known as conceit.

Yet there is something in the nature of all men that draws them as by a magnet back to old scenes. Personally I cannot stay away from London for any length of time. Paris for instance has many attractions besides picture shows, but soon comes a yearning for the Strand—I had almost written Fleet Street, but Fleet Street has an attraction all its own for the newspaper man. No man ever engaged on the great Press of London for any length of time can remain away from Fleet Street. He must sooner or later succumb to its fascination, even, as is sometimes unfortunately the case, when the world has proved too heavy a burden and he has stumbled by the way, he returns to end his days midst the scenes of former triumphs.

The aerodrome has also a call, and when once the true interest in flying has been absorbed, when the reason why a machine flies is understood, and its evolutions in the air can be watched with something more than passing fancy, when once the smell of burnt castor oil is as a perfume, the person becomes an aerodrome habitué, and cannot stay away.

The point about a visit to an aerodrome, that is a regular visit, is that the interest is real—a genuine interest in watching one's favourite machines in the air, noting every movement, feeling pleased when flying well and depressed when flying sluggishly. Nor is the pilot himself still the hero of the gentler sex only, as was once the case. In the early days to be an airman was to become the cynosure of feminine affection, real or imaginary—

generally the latter. So much so was this the case, I believe, that some stage favourites noticed a decided falling off in the average number of proposals of marriage from unknown but enthusiastic admirers. "Fashionable airman" is a term we now seldom see in our daily papers. The airman of to-day is a highly skilled seeker after real progress and knowledge in his loved art. When a man can learn to fly and secure his *brevet* in something under five hours, the mere fact of being a pilot has not much in it to make it worth while calling out the trumpeters, and when a man has become a skilled pilot in every sense of the word, he has no need of trumpeters at all, especially so, that as a rule he is a most unassuming man, with nothing about his mode of life to suggest that he is out for comfort in the shape of flattery. Nevertheless, there is something about being connected even remotely with flying liable to generate into swelled-headedness, so, should anyone ever feel that his hat was becoming a bit tight, I can recommend a visit to his native village; the natives are perfectly unbiased.

## The Hendon Hoax.

I take it that I ought really to be laughing with all the world of aviation at this moment about the hoax played by two possibly good-meaning, but over-enterprising souls, on the people at the London Aerodrome. I take it also that I must have a screw loose somewhere in my gear-box that prevents my mechanism getting into humorous at a touch of the lever, but so far as the latest hoax is concerned, I'm hanged if I can see anything funny in it.

It may be perhaps taken for granted that I am unsophisticated, and liable to take people at their face value until I find a flaw, but if a man sends his card in to me, which states that he is John Smith, I take it for granted that he is, until I find out that he is Jack Jones, and even then I do not feel that I have been had at all. Apparently, so far as I am able to make out, the whole joke, if joke there is, turns on the fact that there is no Crown Prince of Wurtemberg, but I do not mind admitting that until this cropped up I did not know whether there was such a personage or not. There are so many crown princes roving the world, that to miss one or two or add one or two to the list is neither here nor there. The story is well known now, of course, how these two practical jokers turned up at Hendon representing themselves as being a prince and a lord. They were received in the usual courteous way extended to visitors of note, and the "Prince" was treated to a flight that in the ordinary way would have cost him perhaps a few guineas. The total loss to the Grahame-White Company was but the cost of petrol and oil, and if they have been had, they are not alone in their discomfiture—several London editors, who are supposed to know who's who, sharing that distinction with them.



## School Tables at Brooklands Dinner.

At the annual dinner of the Brooklands Aero Club, fixed for the Thursday (March 19th) in Aero Show Week at Olympia, (7.30 p.m.), special "Vickers" and "Bristol" tables are being arranged, presided over by Messrs. R. H. Barnwell and F. Warren Merriam, supported by Messrs. Elsdon and Halford respectively, and a good number of present and past pupils are expected.

# EDDIES.

AN eddy is sometimes due to a trivial cause; it starts, gives a whisk or two, and dies out, or meeting with encouragement, increases in volume, whirls in greater space, and becomes a perfect tornado. An eddy which everyone will wish to take the latter form, is that in the shape of the Desoutter Benefit Fund, now being organised to provide for the future of Marcel Desoutter, who, despite his well-known pluck, finds himself by force of circumstances unable to follow his profession. His terrible accident early last year whilst flying his Blériot at Hendon, is too well known to need description. It was hoped that by the provision of an artificial leg he might again have been able to take the air, but fate has decreed otherwise. The London Aerodrome Company have very kindly placed their splendid flying-ground at the disposal of the committee for Thursday, March 19th, when the whole of the proceeds of the meeting will be devoted to the fund, and I hope that the thousands of admirers of this clever and courageous airman will be present to the last person. Those finding themselves unable to be present, and therefore unable to enjoy the pleasure of helping the gate receipts, need in no wise despair. Subscriptions—be they never so small, may be sent to and will be thankfully received by the Secretary, The Desoutter Fund, 166, Piccadilly, W. If it is a poor heart that never rejoices, it is a poorer specimen of humanity who cannot get his hand down sometimes to help a brother in difficulty.

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It is difficult to one existing to-day in London, with its murky atmosphere and overhanging canopy of smoke, to think of the blue waters of the Mediterranean and the sunshine of Italy and the Riviera. Captain J. H. Halahan, who is returning to England in order to be present at the Hendon dinner at the R.A.C. on the 20th, sends us some interesting notes of doings in the world of aviation in those parts recently, which makes one wish to make a bee line for Cook's and book one's passage. At the Naval Air Station at Frejus, of Napoleonic memory, he found Rene Caudron flying on its trials the new 100 h.p. nine-cylinder Gnome land-and-water Caudron for the French Navy; the first of that make to be delivered. Levasseur was also there flying the Nieuport (also on its trials). At the same time Garros was in the air on his way to Nice, to give his exhibition with Hanouille on the next day. This contest was evidently very wonderful. For a whole hour, Garros on a Morane-Saulnier and Hanouille on a Blériot kept up a continual run of hair-raising antics. Garros' chief stunt seems to have been to force his machine up at an angle of about 45 degrees with the engine off, till the machine stalled, and then to let it drop as it liked, tail, head or side first, recovering with remarkable skill. Maicon was also, it seems, juggling with an Anzani-engined Caudron, doing Chevillard's old trick of spinning on one wing-tip. On the day that Captain Halahan wrote his letter, he had been treated to a fine exhibition by Hanouille, who flew over from somewhere on the coast, possibly Nice, to Genes, gave half-an-hour's performance over the sea, and then flew back again.

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The recent visit of Mr. B. C. Hucks to Nuneaton seems to have aroused the dormant verbosity of the local reporter, and given him the chance to show what he can do in the way of flowery journalism when he really lays himself out. A local paper alleges that Mr. Hucks

stated that "though the volition of the wind had not abated, he would attempt to loop the loop, whereat there was much cheering." Whether this was in appreciation of Mr. Hucks' command over the English language, is not stated. He then goes on to state that this machine is fitted with "special lenses for the airman to see through when flying upside-down." But the writer must himself have been wearing "special lenses" in order to have seen this imaginary fitting.

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Almost concurrently with the publication of this number of FLIGHT will come the opening of the Aero and Marine Exhibition at Olympia. There is little doubt that water-planes will be in the majority, and Londoners should have every opportunity of studying a machine which, owing to the fact that the flying of these interesting craft has to take place on the coast, does not offer the same facilities for observation as land machines. There will, of course, be plenty of purely air machines as well, and I am hoping, and think, that the entire show will be above the average of its forerunners. One aspect of the aero show that always strikes me as being in opposition to the motor show, is the entire absence of the "Knut," either on the stands or amongst the visitors. It is possible here to have a machine explained to one by a gentleman who does not wear pink hose. There will no doubt be visitors whose interest is greater than their knowledge of matters aeronautical, and some curious questions will no doubt be asked, after the manner of the dear lady who last year was so interested in a certain stand showing radiators, and who had thoughts of installing the latest pattern to warm her boudoir.

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Martello towers—the few that are left of them on our coast to-day, are principally used as places of residence for families during the summer season—thus have the mighty fallen. When Napoleon invaded Egypt somewhere about the year 1800, and defeated the Turks at the battle of the Pyramids, he proceeded to build a line of towers from Cairo to Suez to enable him to keep the country. Napoleon has passed, and Egypt remains to worry the diplomats of many countries. Likewise the towers, or the remains of them, are still there, forming a line of land-marks 10 kiloms. apart, right to the coast. Whatever their original purpose, and however well or ill they proved in that purpose, they came in very handy a week or two ago when Marc Pourpe used them as a guide in making his flying trip from Heliopolis to Suez. Seeing how well these towers marked out the route, and how easily they were followed, it makes one again wonder whether something might not be done in the way of marking out a few routes between certain places in England, in some simple way and preparing landing places at intervals of a few miles.

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It is nice to receive encouraging letters from readers so far afield as Vancouver, B.C., and one just received from Herman E. Clarke portrays the energy of a young Englishman in pursuing his studies in aviation in a country where he says there is little or no encouragement. He writes principally re the wing-bending photograph, his remarks being interesting, and we only regret that correspondence on this subject having been closed, it cannot be reopened. Mr. Clarke went out to Canada when but four years of age, and although now he is but just twenty, he has done a lot in the way of construction, under the greatest difficulties with regard



to obtaining materials. His first essay in this respect was to build an Avro type biplane, plans of which he got in America, but the engine at his disposal was not powerful enough, so he had to store his machine whilst awaiting events, which proved to be the burning of the building and the entire destruction of his machine. He has now built a small monoplane with a three-cylinder Humber engine which he says is

"working fine" and on which he hopes to learn a lot in the way of pilotage. He concludes by saying "I have had a lot of bad luck, and it is hard to get people interested in aviation over here." Never mind friend Clarke, get your back against the wall and stick to it. You are evidently made of the right British material, and we are proud to have you as a reader.

"WILL O' THE WISP."

## BRITISH NOTES

"Flight" at Olympia. Stand No. 38.

The "FLIGHT" stand at the Olympia Show, which opens on Monday next and remains open until Wednesday week, will be No. 38, the same place as at all previous Aero Shows, immediately to the right after entering the building by the main entrance facing Addison Road Station. We shall be pleased to have a call from any of our many supporters.

### THE ROYAL FLYING CORPS.

The following announcement appeared in the *London Gazette* of the 10th inst.:-

**R.F.C.—Military Wing.**—Maj. John D. B. Fulton, C.B., R.A., Chief Inspector, Aeronautical Inspection Department, is appointed to the Reserve. December 17th, 1913.

The following appointment was announced by the Admiralty on the 10th inst.:-

A. Corbett-Wilson has been appointed Probationary Sub-Lieutenant in the Royal Naval Reserve, with seniority of March 15th, and to "Pembroke," additional, for the Farnborough Naval Airship Station, same date.

### ROYAL FLYING CORPS (MILITARY WING).

WAR OFFICE summary of work for week ending March 6th, 1914:-

**Flying Depôt. S. Farnborough.**—Experimental work, repairs, and assistance given to the Inspection Branch occupied the personnel of the squadron throughout the week.

**No. 2 Squadron. Montrose.**—The major portion of the week was devoted to packing up portable sheds and occupying the new permanent hangars.

Some long reconnaissances were carried out towards Dunbar and Aberdeen.

**No. 3 Squadron. Netheravon.**—Rain and low clouds have interfered with flying in the squadron, but some useful experiments were made with photography and range-finding.

**No. 4 Squadron. Netheravon.**—Rain curtailed flying on several days. Several reconnaissances were nevertheless made by the officer pilots and training continued.

**No. 5 Squadron. S. Farnborough.**—The weather has been unsuitable for much flying, but the officer pilots of the squadron were frequently out.

**No. 6 Squadron. S. Farnborough.**—Machines newly handed over to the squadron were tested and some reconnaissance flights were accomplished.

**R.F.C. Base at Dover.**

It is stated that in view of the successful work accomplished by the detachment of the Royal Flying Corps, which was stationed at

## OF THE WEEK.

Dover last autumn, it has been decided to make a permanent base there for the corps. £45,000 is to be spent on the formation of the base and the provision of accommodation, of which £41,000 is included in this year's Army estimates.

### And at Portsmouth and Orfordness.

It is also intended to form a base at Portsmouth for the Military Wing of the Royal Flying Corps, and the Army Estimates contain a provision for the expenditure of £15,000 out of a total of £45,000 for barracks, &c. The Estimates also include an item of £10,000 towards the 45,000 which is being spent on the base at Orfordness.

### New British Height Record.

At Eastchurch on Wednesday, Engineer-Lieut. Briggs, R.N., succeeded in improving the British height record by attaining an altitude of over 15,000 ft. on a biplane. At this altitude it was terribly cold, and on returning to the ground the officer's face was found to be severely frost-bitten, so that he had to retire to sick quarters.

### Fast Flying on Short Seaplane.

DURING a test flight at the Isle of Grain on Wednesday, one of the Short seaplanes, carrying pilot and passenger and five hours' fuel, attained a speed of 78 miles an hour and climbed 4,000 ft. in 7½ mins. The machine was also fitted with a wireless telegraphy apparatus.

### An Aviation School at Cambridge.

IN the last issue of the *Cambridge Magazine*, some information is given with regard to a flying school which is to be started in the close vicinity of Cambridge. It is stated that the equipment of the school will include three Vickers machines, and that an expert pilot-instructor of over three years' experience in teaching, and a complete staff of efficient mechanics, have been engaged.

### The British-built Curtiss Engines.

IT is with pleasure that we are able to record that the two 100 h.p. Curtiss motors which will be fitted in the big Curtiss flying boat to be entered by Messrs White and Thompson, Ltd., of Bognor, in the *Daily Mail* circuit of Great Britain, are to be built by the Austin Motor Company, Ltd., Longbridge Works, Northfield, Birmingham.

### New Works for Green Engine Co.

WE are pleased to learn that the Green Engine Co. have now taken works at Twickenham, where all engines supplied by them to purchasers will be thoroughly tested before delivery. These premises, which will supplement their existing arrangements, are fully equipped with suitable testing apparatus, including a Heenan and Froude water dynameter.

## THE FATAL ACCIDENTS ON SALISBURY PLAIN.

It is with the greatest regret that we have to record the two accidents on Salisbury Plain this week, whereby three officers of the Royal Flying Corps lost their lives. The first mishap occurred early on Tuesday morning, when, according to the evidence given at the inquest on the following day, Capt. Downer, after a short flight on a B.E. biplane, at a height of 2,000 ft., made a very fast descent, resulting in the breaking of a wing. A verdict of "Accidental death" was returned. Capt. Downer secured his certificate on a Vickers biplane at Brooklands on August 29th last, and joined the Central Flying School for a special course of training on January 27th.

The second smash occurred on Wednesday morning to a B.E. biplane, piloted by Capt. C. R. W. Allen, and carrying Lieut. J. E. G. Burroughs, both officers being attached to No. 3 Squadron of the Military Wing of the Royal Flying Corps. Apparently while making a turn at a height of 300 ft., something went wrong with the rudder, and the machine dived to the ground. Both pilot and passenger were instantly killed by the smash. Capt. Allen secured

his certificate on a Bristol biplane at Brooklands on November 14th, 1911, and was appointed to the Royal Flying Corps, in which he was graded a Flight Commander on July 1st, 1912. Lieut. Burroughs secured his certificate on a Maurice Farman biplane in France, on January 31st, 1913, and was appointed to the Royal Flying Corps on April 17th, 1913.

In both cases the accidents will be fully investigated by a military court of enquiry and also by the Accidents Investigation Committee of the Royal Aero Club, and it will be as well to await the report of the latter as to the cause of the accident rather than to discuss the vague and varying reports as to what occurred which are current.

In the meantime we can but express our deepest sympathy with the relatives and friends of the deceased officers, and deplore the great loss which our Air Service has sustained.

In the House of Commons on Wednesday, Col. Seely expressed the sympathy of the Government with those bereaved by the unfortunate accidents.



## ARMY ESTIMATES.

THE following official summary, taken from the Buff Book containing the Army estimates, shows the way in which £1,000,000, which Parliament is being asked to vote for aviation, is made up. The Estimates also show that the establishment of the Military Wing of the Royal Flying Corps is to be raised from 1,005 of all ranks to 1,429, made up of 165 officers, 19 warrant officers, 156 sergeants, and 1,089 rank and file. The Admiralty contribution towards the Central Flying School is set down as £34,000 as against £25,000 last year:—

Total Charge for Aviation.		1914-15.	1913-14.
Provision—		£	£
Royal Aircraft Factory	...	82,000	44,000
Inspection	...	14,000	—
Aircraft Stores and Materials	...	441,000	190,000
		537,000	234,000
Establishment of Royal Flying Corps, Military Wing	...	187,900	150,500
Establishment of Special Reserve	...	7,400	—
Establishment of Central Flying School	...	28,840	18,500
Civilian Subordinates	...	3,200	—
Mechanical Transport Vehicles	...	44,000	50,000
Miscellaneous Stores and Supplies	...	32,000	10,000
Land and Buildings	...	201,000	91,000
Directorate of Military Aeronautics, War Office	...	5,660	—
		1,047,000	554,000
Less Appropriations-in-Aid—			
Contribution by Admiralty towards cost of Central Flying School	...	34,000	25,000
Repayment Services and Miscellaneous Receipts	...	13,000	9,000
		47,000	34,000
Total Appropriations-in-Aid	...	47,000	34,000
Net Total	...	1,000,000	520,000

In Col. Seely's memorandum on the Army Estimates, there is the following reference to aviation:—

Good progress has been made during the past year with the development of the Military Wing of the Royal Flying Corps. By the end of this month the personnel of the 5th and 6th squadrons will be complete, and the number of officer fliers will have grown to about 200, including officers in the Reserve, and those holding certificates but not yet admitted to the school. I am glad to be able to state that there has been comparative immunity from serious accident.

A decision was arrived at in the course of the Autumn that for the future the lighter-than-air service for both Army and Navy should be concentrated under the administration of the Admiralty. In pursuance of this decision the Army airships and their appurtenances were handed over to the Navy on January 1st last. The 1st squadron, formerly employed with airships and kites, is being replaced by an additional aeroplane squadron, and by a kite section which in the field will be attached to the headquarters of the Flying Corps. During the coming year, the 7th and 8th squadrons will be completed in personnel and aeroplanes.

During the past year an Inspection Department for Aviation has been formed, and is finding much scope for its activities in inspecting new supplies of all kinds, whether made by contractors or in the Aircraft Factory, and also in overhauling periodically the aeroplanes, engines, &c., of the Flying squadrons.

A special section of the Army Ordnance Department is also about to be formed to deal with the storage and supply of the highly technical and complicated *matériel* used in this branch of the service.

With large numbers of new aeroplanes on order at the present moment, and the constant liability of those in hand to become unfit for service, it is hardly possible to give any exact figure for the number of serviceable aeroplanes in possession of the Army which will not have ceased to be correct before it is printed; but, as a general indication of the progress made in the past year, it may be said that, as compared with 100 aeroplanes in existence on 20th March, 1913, there were on 25th February last 161 on hand, and between those dates 87 had been struck off as unserviceable and replaced.

An adequate reserve of spare engines and considerable quantities of spare parts have been provided. In the present state of development of aeronautics, it is inadvisable to make such provision too far ahead, owing to the risk of parts becoming obsolete before they are taken into use.

The provision of motor transport is keeping pace with the formation of the squadrons.

A large amount of building for the Flying Corps has been carried out during the year. Barracks for two squadrons at Netheravon have been almost completed. At Farnborough the sheds for two squadrons are almost ready, and barracks for the rank and file will be fit for occupation in about three months. At Montrose the *personnel* is accommodated in existing barracks, and the necessary sheds and workshops will be finished by the end of the month. At the Central Flying School permanent quarters for the staff will be completed by the same date. Additions and improvements have also been made at the Royal Aircraft Factory.

Provision is now made to complete the barracks for six squadrons, to begin those for the seventh and eighth squadrons, to replace a large part of the temporary buildings at the Central Flying School by permanent buildings, and to take in hand the buildings for the Aircraft Park and Ordnance Depot.

In the course of his speech in the House of Commons on Tuesday introducing the Army Estimates, Col. Seely said: Now with regard to aviation. I have asked the House to sanction a very large Estimate indeed—£1,000,000—for aviation. It is a very large sum; it is much larger than was anticipated. The provision of aircraft is the most expensive thing that an army has ever had to face. I was speaking to the War Minister of a great neighbouring Power not long ago, and he said to me, "Beware of aviation, it eats up money." It does eat up money. In order that it should be safe it has got to be very expensive. Only the other day I said that we had remarkable records of freedom from accidents in the Military Wing. Since I last addressed the House, there was been one accident of a fatal character. In the Memorandum which I have circulated I thought it right to refer to the comparative immunity from fatal accidents, but with every care there must be accidents. By an unhappy coincidence on the very morning of the day on which I am presenting these Estimates to the House, another brave young officer loses his life. This time, again, not in the Military Wing, but under tuition on Salisbury Plain. I have not yet full details of the cause of the accident, which, of course, will be most carefully investigated. But that this brilliant young officer lost his life in the service of his country as fully as though he had died on the field of battle, no one will deny. It must be a hazardous business, but it can be made less hazardous by the provision of money, and in that the House has been most generous. I acknowledge with gratitude that the House has never refused to vote any sum however large for this vital service of the State. The fact that our immunity from accidents has been so much greater in the past than in the case of other countries, is perhaps a matter upon which we may fairly congratulate ourselves, and on which I wish to make my acknowledgment to the House and to the Exchequer which provided the money. We require this large sum, because, although our Army is small, it must be most efficient.

I was talking about a year ago to one of the foremost of the combatants in what is known as the Balkan War. He drew with pencil and paper a graphic picture of the great events which opened that war. He was then under no illusion as to the ultimate result. While we here were thinking that the face of Europe was to be changed, he realised that a chance had been missed. Having drawn me a picture of the situation of the opposing armies, where he thought they were and where they actually were, he said bitterly to me: "Had we had one single aeroplane the whole history of Europe would have been altered." Speaking now with the knowledge that we have, there can be no doubt that what he said was literally and entirely true. One aeroplane—and they had not got it. It was not because they had not got an aeroplane, or had not got the men; they had got several aeroplanes and several men; but they had not got the organisation and the numbers to ensure that the aeroplane and the man should be there at the time. You cannot improvise an air service. We have been laboriously building it up now for more than two years, and I honestly believe that the British Army has now got it. And it will continue to have it so long as we have the men who are determined to make any sacrifice in order to ensure that we shall not fall behind in quality—I say nothing of quantity—in this great problem of the mastery of the air for the purposes of war. I hope we shall never have to say that if we had had one single aeroplane on a particular occasion our history might have been altered. We have now a very good aeroplane. When I was dealing with this subject on the Supplementary Estimates reference was made by more than one speaker to the fund opened in Germany to provide money from private sources for aviation, and it was stated that a considerable sum had been allocated to people who flew for one hour and to others who flew for one hour with a passenger. The inference was drawn that we could not do anything of that kind. In a letter written to General Henderson by the officer commanding one of our air squadrons it was stated

that in that one squadron alone during the past thirty days, on the basis adopted in Germany, they would have drawn £4,875.

Our Army aeroplanes are constantly flying over the country, and those engaged in the Service have become very expert. I would make a public appeal, not only to owners of land, but to farmers who may have suitable flat fields of permanent pasture, where the telegraph wires are not too near and the trees around are not too big—fields capable of taking one of our big aeroplanes—to communicate with the War Office or with General Henderson with a view to making a number of landing-places all over England, Scotland, Wales, Ireland, in order to increase the safety of cross-country flying. It may be that when flying at a great height an aviator selects what looks like a suitable field for landing, and he finds that there is a barbed wire fence running across the middle of the field, which he was not able to distinguish, and in that way an accident may be caused which may involve the death of the airman. If we could obtain such information as I have specified we should be able to send down expert officers to choose proper places for landing, and to show the best methods of indicating that they are landing places. In this way we should be able to secure a greater measure of safety for those who are engaged in navigating the air in a difficult and somewhat dangerous country like ours.

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## CORRESPONDENCE.

### An Accident and an Emphatic Denial.

[1843] I have seen it stated in a certain journal in reference to the accident to F.E.2 that:—

"The pilot who flew the machine at Shoreham two days before the accident, said—'If ever I get this beast home, I shall go to church for a week.' It would be interesting to have a denial of this."

I deny this.

S. C. WINFIELD-SMITH,  
(Pilot of the Machine).

Royal Aircraft Factory, South Farnborough, March 6, 1914.

### Fear at High Altitudes.

[1844] Pilots of aircraft, especially those who go up to high altitudes, as a rule are not very communicative. If they are, they rarely succeed in describing their impressions as vividly as the "Dreamer" managed to tell us of what he felt during his imaginary attempt at the altitude record. I am not a pilot, nor have I ever been higher than the top of the Eiffel Tower. Should, however, none of the British pilots come forward and tell us what it feels like to be many thousands of feet up, the following may be of interest.

During the second stage of the Berlin-Vienna race in June, 1912, Hellmuth Hirth, the German pilot, and winner of the event, had to cross the "Riesengebirge," a range of mountains rising in places up to great altitudes. The sensations while flying over these hills high above the clouds at a height of some 8,000 ft. are described in his book, "20,000 Kilometer im Luftmeer," as follows:—

"These 1½ hrs. of flying above the clouds finally had an extraordinarily fascinating influence upon me. I felt elated and supreme over all the troubles of this earth. A feeling of complete safety and calmness came over me, and finally culminated in the desire to get

Mr. Arthur Lee: What about live stock?

Col. Seely: I put that point the other day to some of our air squadron commanders, and they said: 'Oh, we will chance the cows.' Of course I could not suggest that landing places of this kind should be kept permanently free of stock, but I suggest that they should not be ploughed up or cut across with fences without due notice to us.

An Hon. Member: What sort of acreage would the right hon. gentleman suggest for these landing places?

Col. Seely: It is very hard to say. It would depend on the state of the field. You may say the bigger the better. An 80-acre field would be an admirable landing ground. A 50-acre field has been suggested to me, and I have myself landed on several occasions in a 30-acre field. A 30-acre field is quite good enough for ordinary purposes, provided you have not telegraph poles on one side and high trees on one or more sides. It depends very greatly on the type of aeroplane and on how long it takes to pull it up.

It must be remembered that an aeroplane flies at a speed of about 50 miles an hour, and when it has topped a hedge and has come to the ground some hundred yards or so beyond, it is desirable that the largest possible space should be available for it to pull up in.

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out of the machine and jump down into the soft 'cotton-wool' beneath me. You cannot hurt yourself, the spirit whispered, for down below are soft down-cushions on which you can rest in perfect peace."

If these words are compared with the "Dreamer's" reflections, it will be noticed that in his flight of fancy he has—as usual—come very near to what things are like in reality.

"ANGLO-GERMAN."

### Aerodynamic Effects of Gusts on Wings.

[1845] The article by Professor Herbert Chatley, B.Sc., &c., in FLIGHT for February 28th, on page 222, is I consider of great interest to those concerned in matters aeronautic.

I trust that you will be able to spare a little space in order that I may set forth a theory of my own based on the principles set forth in that article—namely, those of variable resistances of bodies in a pulsating wind.

My theory is one which, I think, is a certain defence of the tractor machine, so much maligned in some circles.

It is noticeable that most tractor machines carry a good or even high loading. Now it may be said that the value of: Speed of machine plus the speed of the slip stream is at a maximum so far as the plane of a monoplane is concerned, in one position of the propeller alone; that is, when the blades of the propeller are horizontal, there being little or no draught. When the planes are considered, should the blades be vertical?

This shows that the portion of the planes effected by the propeller is subjected to a pulsating wind, even in normal flight. The pulsations are naturally very rapid, in fact equal per minute to half the propeller's turns per minute.

Now, as the lift on similar circumstances is relative to the resistance, I claim that over the area effected a greater weight may be carried for every unit of area.

Bedford Park.

S. C. SHEPLEY PART.

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## FOREIGN AIRCRAFT NEWS.

### New American Records.

ON his 90 h.p. Martin tractor at Los Angeles on the 14th ult., Glenn Martin made three American records. With two passengers, he went up to 800 ft., then continued across country until, owing to the bearings of the motor burning out, a descent had to be made at Oceanside, by which time the machine had been in the air 1 hr. 40 mins. The new American records are for height, duration and cross-country for pilot and two passengers.

On the same day Lieut. T. F. Dodd, on a similar machine, also made two new records. Accompanied by Serjeant H. Marcus, Lieut. Dodd flew from San Diego, Cal., to Los Angeles and back, the distance of 246 miles being traversed in 272 mins., and at an average altitude of 3,500 ft.

### With the Loopers.

ON Sunday last, Poiree on a Rhone-engined Farman looped the loop at Caen, while Garros and Audemars looped on their Moranes at Angers. At Beziers, Lenoir made ten successive loops. On the previous Wednesday, Plantier, the chief pilot at the Bron aerodrome near Lyon, looped the loop three times with a passenger.

### The First French Officer to Loop.

IT may be recalled that when looping the loop was first demonstrated the French military authorities issued an order forbidding military pilots to attempt the feat. On Sunday week, however, at the Blériot aerodrome at Buc, Lieut. Gaubert, who, since his accident three years ago, which cost him the sight of one eye, has done very little flying, succeeded in carrying out the manoeuvre. In a similar flight on the following Monday he looped the loop five times in succession.

### A Prolific Looper.

IN one of his flights during the recent four days' meeting at Heliopolis, Guillaux looped the loop 12 times consecutively.

### Farman Aerial Deliveries.

ON the 5th inst. Rougerie, on one of the Farman School machines, flew from Etampes to Buc, and then returned on one of the new military-type Farmans built for the French Army. Two other military M. Farman machines, intended for stations on the Eastern frontier were also flown from Buc to Etampes by Minier and Gressard respectively.



## M. Farman's Weekly Jaunt.

FOR his usual weekly excursion, Maurice Farman, on the 5th inst., accompanied by his daughter and Senouque, went from Buc to Chambord. They returned to Buc during the afternoon, passing by Etampes en route.

## Helen After Parliamentary Honours.

HELEN, the well-known pilot of the Nieuport machine, is a candidate for the Chamber of Deputies for the Boulogne-sur-Seine division. If he is returned he intends to make a special effort in defence of the interests of aviation.

## Double Fatality at Vienna.

WHILE an aeroplane piloted by Lieut. Esner was being flown at the Aspern aerodrome, near Vienna, on Monday, it fell, and both the pilot and the passenger, a non-commissioned officer, were killed.

## Sikorsky Machines for Russian Navy.

It is announced from St. Petersburg that the Russian Naval authorities have purchased Sikorsky's latest giant biplane, the "Ilia Mourametz," and intend to transform it into a hydro-aeroplane by fitting floats. It is also stated that the Russian Government has ordered five similar machines.

## Good Flight on the Sikorsky.

ON the 4th inst., Sikorsky, on his latest machine, made a flight of 55 minutes' duration, in a snowstorm, carrying eight passengers. The average altitude during the flight was 600 metres.

## Mr. Hawker has a Smash.

A BRIEF cable message from Sydney, N.S.W., announces that while making a flight at Albury on Sunday last, Mr. Hawker's machine suddenly fell to the ground and was partly wrecked, but fortunately the pilot escaped unhurt.

## The Dunne Biplane in America.

THE first Dunne biplane built in the U.S.A. has just been turned out by the re-formed Burgess Company of Marblehead, Mass., who have the right to build the machines in the States. This first machine takes the form of a hydro-aeroplane, being mounted on a narrow punt-shaped central float, with auxiliary floats under the ends of the main planes.

## Cause of Lieut. Post's Accident.

A REPORT has been issued by the Committee officially appointed to enquire into the accident which befell Lieut. H. B. Post, while making an attempt to beat the American altitude record. The conclusions of the Committee are:—

"Lieut. Post descended from an altitude of approximately 12,000 ft. to an altitude of 1,000 ft. in a normal manner and from that point to a point approximately 600 ft. above the ground at an increasingly steeper angle, the machine ultimately assumed a vertical head-down position, falling into the bay. The board was unable to determine the cause or fix the responsibility for the accident, but is of the opinion that the cause was due to the machine getting into a vertical head-down position, causing excessive pressure on the planes which resulted in the collapse of some part or parts of the machine."

## Another Trial by the "Schutte-Lanz."

A SECOND trial trip was made with the new "Schutte-Lanz" military airship on the 5th inst., when with 25 passengers on board she made a cruise of an hour and a half's duration, passing over Mannheim, Spire and Heidelberg, and returning to her hangar at Cologne.

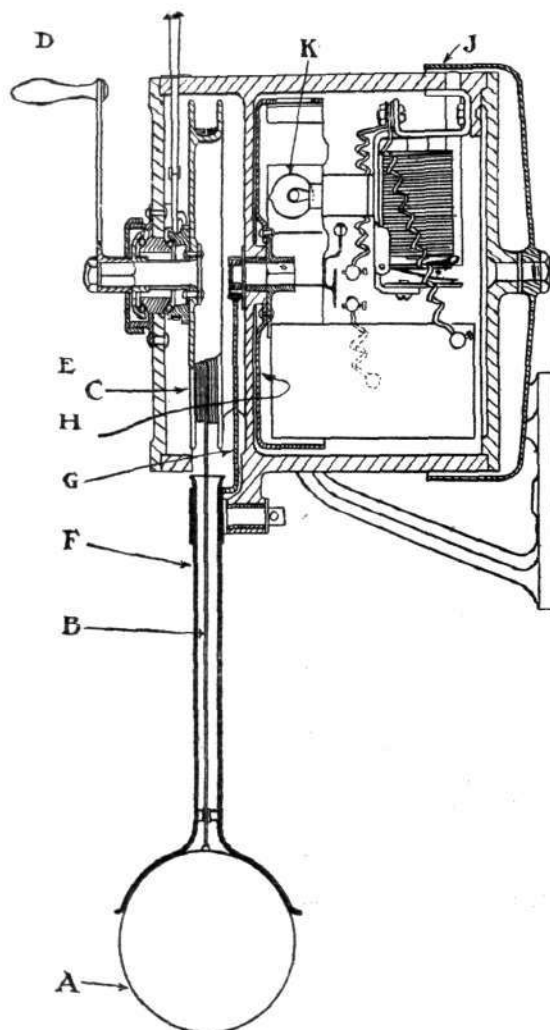


## The London Aerodrome Dinner.

IT is evident that the First Annual Dinner of the London Aerodrome, Hendon, which is to be held at the Royal Automobile Club on Friday next, will be a very brilliant function. We learn that among those who will support the Earl of Lonsdale, who will preside, will be:—The Duke of Rutland, the Earl of Drogheda, the Earl of Portarlington, Lord Herbert Vane Tempest, Lord Edward Grosvenor, Lord Carbery, Sir Archibald Sinclair, Sir Bryan Leighton, Hon. Arthur Stanley, M.P., Sir Charles Henry, Admiral Lord Charles Beresford, Admiral Sir Edward Seymour, Sir Arthur Conan Doyle, Sir Ernest Shackleton, Alfred de Rothschild, Signor Marconi, W. Joynson-Hicks, M.P., H. G. Wells, Major Baden-Powell, Richard T. Gates, Commander Samson, R.N., Lieut.-Col. Sykes, Lieut. Spencer Grey, R.N., Capt. A. G. Fox, R.F.C., L. Blériot, Mervyn O'Gorman, Gustav Hamel, B. C. Hucks, Brindejonc de Moulinais, R. O. Crawshaw, T. Sopwith, A. V. Roe, F. P. Raynham, Sidney Pickles, J. Valentine, P. Verrier, Robert Loraine, E. T. Willows, H. Salmet, and C. Grahame-White, as well as a number of the foremost foreign pilots.

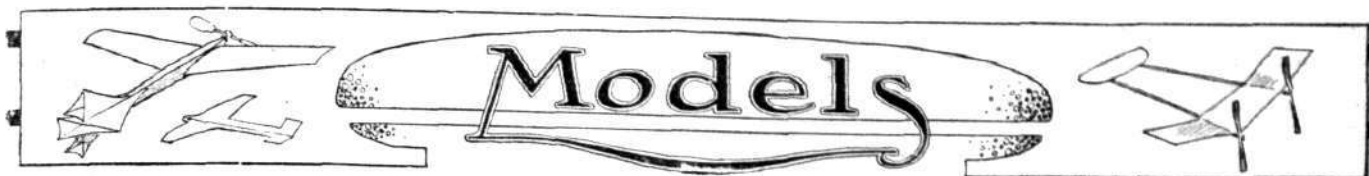
## THE PEMBERTON BILLING SUPERMETER.

AN instrument that will indicate to a pilot, when about to alight, the height his machine is from the ground, from, say 20 ft. downwards, should undoubtedly be a valuable addition to the outfit of an aeroplane, for it can truly be said that alighting is the most difficult, not to say dangerous, task the pilot of an aeroplane has to contend with. Great judgment is required in determining the smaller heights from the ground, whilst it has been found that this is a far more difficult matter when alighting on water instead of land. If alighting on either land or water under normal conditions is difficult, it is considerably more so at night or in fogs. Such an instrument referred to above is the Pemberton Billing Supermeter, the invention of Mr. Pemberton Billing, who is well known to most of our readers for having taken his "ticket" one day before breakfast some little time back. The "P.B." Supermeter is decidedly simple and ingenious, consisting, as it does, of a hollow metal sphere (A) attached to a fine wire cord (B), which when not in use is coiled round a drum (C), the sphere being housed in a suitable cup. When the pilot wishes to alight he releases the



A sectional sketch of the Pemberton Billing "Supermeter."

drum by means of the lever (D), permitting the wire to run out, and regulating its speed by a hand brake attached to the same lever. The sphere now remains suspended beneath the aircraft, the wire being of such a length that when the machine is approximately 15 ft. above the surface of the water the sphere floats on the water so that the motion of the aircraft causes the wire to move backwards and assume an angle which varies with the height of the machine. This movement is transmitted through the tube (F) and quadrant (G) to a rotary indicating drum (H), so calibrated as to record the height above the surface of the water, readings being given for every three feet. A gong (J) and electric bulb (K) are operated simultaneously, the former attracting the attention of the pilot, and the latter projecting a beam of light through a transparent scale, thereby facilitating observations at night. This instrument can also be adapted for use over land as well as water, in which case an attachment is fitted to automatically sever the wire should any resistance sufficient to affect the stability of the machine be encountered.



Edited by V. E. JOHNSON, M.A.

### The Coming Show at Olympia.

By the time that these lines are in the hands of our readers the Exhibition at Olympia will practically be upon us. The feature of last year's show was undoubtedly the model hydro-aeroplanes, which attracted the universal attention of all who visited the Show. These we shall again have with us, but the novelty has now worn off; the only equivalent to take their place from this point of view, so far as we can recollect, is the Ornithopter or Wing Flapping class; but such have been at aeronautical exhibitions in some form or another from time immemorial, and they will not have the same charm of novelty that the hydro-aeroplane models had. Their chief point of interest is centred in their doings at the actual flying tests.

In spite, however, of the fact that very possibly the exhibition may not contain such a distinctly novel class as last year, there are plenty of indications, apart altogether from the very large number of exhibits, of the Show being a most interesting one, and one which no aeromodelist should fail to visit. One of the most valuable lessons to be learnt, from a modellist point of view, is that of construction; at no other place nor on any other occasion is such an opportunity of doing this provided as at Olympia. Such a lesson can only be learnt very imperfectly from books or drawings, at a far greater expenditure of time and study. The great point to bear in mind when visiting such an exhibition is not to make a tour of inspection in a spirit of carping criticism only, but rather with a view to finding out the good points which any machine may possess. Do this first of all at any rate, then criticise as much as you like, provided only that your criticism be not merely of a destructive character. It must not be forgotten that the models generally are competitive, built to fulfil certain conditions, and that the conditions and not the models may be the proper objects of criticism.

### A Six-Foot Span Glider.

A correspondent, Mr. N. Banks, writes as follows: "Being greatly interested in gliding, I have done a good deal in this way with models with very good results. But I should like now to make a larger model of about 6 ft. span, to save time, of which I have none too much to spare. I should much appreciate your opinion and should like you to give in your columns a design and drawing for a model about this size. I am sure there are many more readers who would be pleased with the same besides myself who cannot afford the time and money to make a full-sized glider. I should mention that I prefer the monoplane type."

Our correspondent does not supply enough particulars, in fact, only two are given, viz., the span and a monoplane type for preference. The writer has constructed two or three engined models with a span of nearly 6 ft., also some of Mr. H. H. Groves' models are not far short of this; a few rubber-driven machines of nearly this span have also been constructed, as well as some engined models of a greater span. All these models have differed vastly in design and construction.

If our correspondent will send us further particulars as to what type he prefers, if he desires it to have a proper landing chassis, if it is to be collapsible for transport; if the fuselage is to be covered in, &c., &c., and also the particular aim he has in view in experimenting with the same, we shall be pleased to go into the matter further. In the meantime, if any readers should happen to have at any time constructed a glider of about that span, perhaps he will kindly send some particulars.

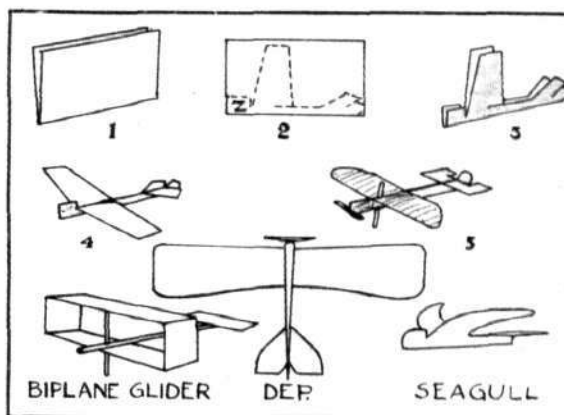
### Some Simple Paper Gliders.

By J. COWLEY.

"In my experiments with paper gliders I have mainly used types similar to existing types of aeroplanes. In making simple paper gliders the first thing to do is to take a piece of fairly thick paper of convenient size, say 7 ins. by 7 ins., and fold it as shown in Fig. 1, across the centre. Sketch on one side the dotted line form shown in Fig. 2, and we have number 3, a model Antoinette, after, of course, the wings and tail have been folded down as in Fig. 4. In this way many types can be made. I also find that by placing a cardboard propeller in the front on a pin the model travels twice the distance and twice as fast. [We should like to hear what others have to say on this point.] Illustration number 5 shows a Blériot so fitted and with a landing spar as well. If the model proves too heavy at the head, clip off some of the folded paper, or else cut the tail shorter. If it has not enough headway, clip the wings a little shorter, but never, if possible, handle the wings or tail. Before trying the model it should be held straight in front of one, about on

a level with the eyes, and carefully looked along from head to tail or tail to head, or both even can be tried, to see that the tail and wings are in a line. If the wings have a dihedral, as in the Antoinette, then this angle should be the same on both sides with respect to the tail plane. If upturned tips are used then the tip angles should be the same. Many a time in my leisure I cut a few models and hold an aviation meeting."

[One of the great advantages of paper gliders is the ease and rapidity with which they can be made, and the fact that they can be



employed to illustrate so many of the leading features and principles of aviation and aerodynamics. Many a person has been first interested in aviation by seeing an interesting set of experiments with such, and aeromodelists experimenting with the latest type of propelled models should not altogether neglect this simpler type, which in proportion can teach us more of the elementary principles of flight than its more ambitious brother.

It is not, it is true, safe to deduce too much *re* stability in actual flight from such experiments, because the self-propelled is not the same type as the gravity-propelled model; but just how to glide automatically to earth with perfect safety in case of enforced descent is one of the problems of aviation, and here experiments with gliders may not be without value. In any case, to interest others in his art should be one of the chief aims of every aeromodelist, and in this respect he will find the simple paper glider a very powerful assistant.—V.E.J.]

### The Canard Type Model.

"I read with interest your article *re* the Canard type of aeroplane in FLIGHT," writes Mr. Rowland Cross, "and I am quite in agreement with you. My experiments lead me to believe that the tail type is even more stable than the Canard, but that both become more or less unstable when propelled by a tractor screw. I cannot think that the tractor machine is the type of the future."

Mr. A. Roberts, writing on the same subject, says: "I do not think aeromodelists are trying to shirk the question of covered-in fuselages. The reason why models with covered-in fuselages are not more in evidence is because in open competition they do not stand a chance against models of the A frame twin-propeller type. Aeromodelists are not going to spend time and money on experiments with models of the 'Canard covered-in fuselage' type, when they can, by constructing a model of the A frame twin-propeller type, gain trophies or prize money. If competitions could be arranged in which flying models of an experimental kind could compete, I think it would be better for the science of model aviation."

Referring to Mr. Roberts' communication, there are, or at any rate there have been, many aeromodelists who place knowledge before "pots," and who care nothing at all about competitions save as such add to our knowledge. It is curious, however, how very few seemed to have made any experiments with the type referred to; personally, we do not know of half a dozen. As a matter of fact, we can only call to mind three. If any reader who may chance to see this paragraph and who has made any such experiments, or who may know of anyone who has, will communicate with us, we shall be greatly indebted to him.

In open competitions, as our correspondent says, we cannot expect a competitor to come forward with a type or construction



which puts him at a natural disadvantage. If the only way (apart from personal experiments which are not always possible) to gain information is by means of an open competition, with trophies or prize money appended to it, then it is to be hoped that during the present flying season some competitions will be arranged for covered-in fuselages. We know at any rate of one donor of several valuable prizes in the past who strongly favours such, and after all those who pay the piper have some right to call the tune.

## Model Club for Sheerness.

Mr. Gilbert Harris, of 95B, Rose Street, Sheerness, will be glad to hear from anyone interested in models in that neighbourhood, with a view to forming a practical model aero club in Sheerness.

## Suggestions for 1914 Competitions.

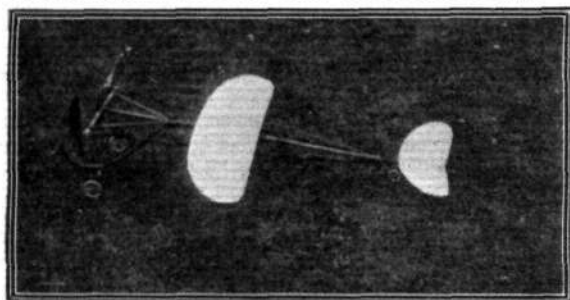
Mr. W. E. Evans (Hon. Sec. Paddington and District Aero Club) writes as follows:—"Referring to your notes in FLIGHT re suggestions for 1914 competitions, it may interest you to know that at our committee meeting last Wednesday I brought forward the suggestion for a competition for 'single surface' models, e.g., monoplanes à la Dunne, Cedric Lee, &c. As the Canard type model has practically received its death-blow so far as scientific models are concerned, it struck me that a competition on the above lines would be a step in the right direction. It is probable that a gold medal will be offered as a prize in this competition."

We think this is certainly a move in the right direction, and are sure such a competition will yield most interesting and instructive results.

## Mr. J. E. Balden's Tractor.

The length of the model shown in the illustration is 30 ins. Span of main plane 24 ins., chord 5 ins., tail span 10 ins., chord 4 ins., vertical fin or rudder 4 ins. by 4 ins. The chord stated above being, of course, the maximum chord.

"I have had some splendid flights with this model," writes Mr. Balden, "it showing very good stability. They are certainly far more interesting than the more usual loaded elevator type. I can



Mr. J. E. Balden's tractor.

obtain a very fine adjustment of the tail by means of the straining wires which are on the top and bottom of the body. It rises off the grass seen in the photograph quite easily. I shall be very pleased to give any other information regarding it to anyone desiring it."



## KITE AND MODEL AEROPLANE ASSOCIATION.

### Official Notices.

#### British Model Records.

Single screw, hand-launched	Duration ...	D. Driver...	85 secs.
Twin screw, do. ...	Distance ...	R. Lucas ...	590 yards.
	Duration ...	G. Hayden ...	137 secs.
Single screw, rise off ground	Distance ...	W. E. Evans ...	290 yards.
	Duration ...	W. E. Evans ...	64 secs.
Twin screw, do. ...	Distance ...	L. H. Slatter ...	365 yards.
	Duration ...	J. E. Louch ...	2 mins. 40 secs.
Single-tractor screw, hand-launched ...	Distance ...	C. C. Dutton ...	266 yards.
	Duration ...	J. E. Louch ...	91 secs.
Do., off-ground ...	Distance ...	C. C. Dutton ...	190 yards.
	Duration ...	J. E. Louch ...	94 secs.
Single screw hydro., off-water	Duration ...	L. H. Slatter ...	35 secs.
Single-tractor, do., do.	Duration ...	C. C. Dutton ...	29 secs.
Twin screw, do., do.	Duration ...	L. H. Slatter ...	60 secs.

Prizes for Model Tests at the Northampton Polytechnic Institute.—The Aeronautical Society of Great Britain have donated the sum of £5 in prizes for a competition organised in conjunction with this Association for models, the final test in which will be to ascertain in a wind tunnel the best lift/drag ratio of the models. The joint research committees will meet to draw up the rules, &c., and the contest will be held shortly.

Aero Show.—By the time of this being published the 216 exhibits in the Model section organised by the Association under the patronage of the Royal Aero Club will be in position, but if not, those taking their models on the 14th are requested to arrive before 6 p.m. with them.

Exhibition at Felixstowe.—Any exhibitor who can spare his model for this exhibition is requested to inform the hon. sec. during the Show at Olympia.

Attendance at Show.—The hon. sec. will attend the Show every evening from 6.30, except Tuesday, 17th inst. The secretaries meet on Wednesday, 18th, at 7 o'clock, and it is hoped all will endeavour to be present.

27, Victory Road, Wimbledon.

W. H. AKEHURST, Hon. Sec.

## AFFILIATED MODEL CLUBS DIARY.

CLUB reports of chief work done will be published monthly for the future. Secretaries' reports, to be included, must reach the Editor on the last Monday in each month.

**Aero-Models Assoc. (N. Branch)** (27A, SEDGEMERE AVENUE, EAST FINCHLEY, N.)

MARCH 14TH, flying, Finchley, 3 p.m.; March 15th, 10 a.m. Will all members meet at Club Stand, Thursday, March 19th, at 8.30 p.m.?

**Leytonstone and District Aero Club** (64, LEYSPRING ROAD).

MARCH 15TH, at 10 a.m., flying, Wanstead Flats. All models for exhibition must be in position by to-day (Saturday) at 6 p.m.

**Paddington and Districts** (77, SWINDERBY ROAD, WEMBLEY).

MARCH 14TH, members exhibiting at Olympia meet at the Club's Stand at 4 p.m.

## UNAFFILIATED CLUBS.

**Finsbury Park and District** (52, LAMBTON RD., STROUD GREEN).

MARCH 14TH, flying, Finsbury Park (kite ground), 2.30 p.m. till dusk.

**Ilford Model Ae.C.** (83, ENDSLEIGH GARDENS, ILFORD).

THE above club has offered a prize to the member who sends the best design for a club badge. Members may enter as many designs as they wish. Each design must be on a separate sheet of paper with the member's name and address on the back. All entries, to the above address, must be in not later than Saturday, March 14th. Those coming after that date will not be considered. March 15th, first flying meeting on new model aerodrome, at 10 a.m. (weather permitting). The new aerodrome (at Hog Hill, Hainault Forest, Chigwell, Essex) has been kindly lent to the club by the L.C.C.

**Liverpool Aero Research Club** (62, CEDAR GROVE, LIVERPOOL).

MARCH 14TH, flying, all types, Stanley Park, 3.30 p.m. till dusk.

**S. Eastern Model Ae.C.** (1, RAILWAY APPROACH, BROCKLEY).

NEXT week-end flying meetings will be held at Woolwich Common, Blackheath and Lee aerodrome as usual.



## PUBLICATIONS RECEIVED.

*Warnende Stimmen in Bezug auf Zeppelin-Ballons.* By Victor Silberer. Vienna: L. W. Seidel and Sohn.

### Catalogue.

*Brooke Marine Motors and Motor Boats.* J. W. Brooke and Co., Ltd., Adrian Works, Lowestoft.



## IMPORTS AND EXPORTS, 1913-1914.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures, see FLIGHT, January 25th, 1912, and for 1912 and 1913, see FLIGHT for January 17th, 1914:—

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## Aeronautical Patents Published.

### Applied for in 1913.

Published March 12th, 1914.

- 3,644. C. BECK. Speed indicator for aeroplanes.
- 4,393. H. W. J. E. GOLTSTEIN. Projectiles for shooting at airships, &c.
- 5,221. ALLEGEMEINE ELEKTRICITÄTS GES. Aeroplane with folding wings.
- 12,440. E. WHEELER. Aeroplane propeller.
- 17,065. CARL ZEISS. Sighting instruments for aircraft.

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